UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
REGION 6

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| IN THE MATTER OF:<br>U.S. OIL RECOVERY SUPERFUND SITE<br>400 NORTH RICHEY AREA OF INVESTIGATION<br>Pasadena, Harris County, Texas | ADMINISTRATIVE SETTLEMENT AGREEMENT AND ORDER ON CONSENT FOR REMEDIAL INVESTIGATION/FEASIBILITY STUDY<br><br>U.S. EPA Region 6<br>CERCLA Docket No. ____ |
| Respondents | Proceeding Under Sections 104, 107 and 122 of the Comprehensive Environmental Response, Compensation, and Liability Act, as amended, 42 U.S.C. §§ 9604, 9607 and 9622. |

ADMINISTRATIVE SETTLEMENT AGREEMENT AND ORDER ON CONSENT
FOR REMEDIAL INVESTIGATION/FEASIBILITY STUDY

## I. JURISDICTION AND GENERAL PROVISIONS

1. This Administrative Settlement Agreement and Order on Consent ("Settlement Agreement") is entered into voluntarily by the United States Environmental Protection Agency ("EPA") and the Respondents listed in Appendix A ("Settling Respondents"). The Settlement Agreement concerns the preparation and performance of a remedial investigation and feasibility study ("RI/FS") for the 400 North Richey Area of Investigation ("AOI") of the U.S. Oil Recovery Superfund Site (such AOI hereinafter referred to as "Site"), located at 400 North Richey Street, Pasadena, Harris County, Texas and the reimbursement for Future Response Costs, as defined herein, incurred by EPA in connection with the RI/FS.

2. This Settlement Agreement is issued under the authority vested in the President of the United States by Sections 104, 107 and 122 of the Comprehensive Environmental Response, Compensation, and Liability Act, as amended, 42 U.S.C. §§ 9604, 9607 and 9622 ("CERCLA"). This authority was delegated to the Administrator of EPA on January 23, 1987, by Executive Order 12580, 52 Fed. Reg. 2926 (Jan. 29, 1987), and further delegated to Regional Administrators on May 11, 1994, by EPA Delegation Nos. 14-14-C (Administrative Actions Through Consent Orders) and 14-14-D (Cost Recovery Non-Judicial Agreements and Administrative Consent Orders). This authority was further redelegated by the Regional Administrator of EPA Region 6 on June 8, 2001, to the Superfund Division Director by EPA Region 6 Delegation Nos. R6-14-14-C (Administrative Actions Through Consent Orders) and R6-14-14-D.

3. In accordance with Sections 104(b)(2) and 122(j)(1) of CERCLA, 42 U.S.C. §§ 9604(b)(2) and 9622(j)(1), EPA notified the Federal and State natural resource trustees on May 9, 2013, of negotiations with potentially responsible parties regarding the release of hazardous substances that may have resulted in injury to the natural resources under Federal and State trusteeship.

4. EPA and Settling Respondents acknowledge that there is a Removal Action currently being conducted at the Site. The Removal Action will involve removal of materials on the surface of the Site, including the removal of the bioreactor and its contents, the removal of accumulated water from the containment pond and removal of materials in roll-off boxes, drums and totes, above-ground storage tanks, and other units at the Site. Due to the nature of the Removal Action field work, there is the potential for interference with the prompt performance of the on-site Work. Consequently, the Work Plan shall include a schedule that coordinates the on-site Work so as to avoid any potential interference.

5. EPA and Settling Respondents recognize that this Settlement Agreement has been negotiated in good faith and that the actions undertaken by Settling Respondents in accordance with this Settlement Agreement do not constitute an admission of any liability. Settling Respondents do not admit, and retain the right to controvert in any subsequent proceedings other than proceedings to implement or enforce this Settlement Agreement, the validity of the findings of fact, conclusions of law and determinations in Sections V and VI of this Settlement Agreement. Settling Respondents agree to comply with and be bound by the terms of this Settlement Agreement and further agree that they will not contest the basis or validity of this Settlement Agreement or its terms.

## II. PARTIES BOUND

6. This Settlement Agreement applies to and is binding upon EPA and upon Settling Respondents and their successors and assigns. Any change in ownership or corporate status of a Settling Respondent including, but not limited to, any transfer of assets or real or personal property shall not alter such Settling Respondent's responsibilities under this Settlement Agreement.

7. Settling Respondents are jointly and severally liable to the EPA for carrying out all activities required by this Settlement Agreement. In the event of the insolvency or other failure of any one or more Settling Respondents to implement the requirements of this Settlement Agreement, the remaining Settling Respondents shall complete all such requirements.

8. Settling Respondents shall ensure that their contractors, subcontractors, and consultants which are retained to conduct the Work to be performed under this Settlement Agreement receive a copy of this Settlement Agreement and comply with this Settlement Agreement. Settling Respondents shall be responsible for any noncompliance with this Settlement Agreement.

9. Each undersigned representative of Settling Respondents certifies that he or she is fully authorized to enter into the terms and conditions of this Settlement Agreement and to execute and legally bind Settling Respondents, to this Settlement Agreement.

## III. STATEMENT OF PURPOSE

10. In entering into this Settlement Agreement, the objectives of EPA and Settling Respondents are: (a) to determine the presence, nature and extent of any contamination and any threat to the public health, welfare, or the environment caused by the alleged release or threatened release of hazardous substances, pollutants or contaminants at or from the Site, by conducting a Remedial Investigation as more specifically set forth in the Statement of Work ("SOW") attached as Appendix B to this Settlement Agreement; (b) to identify and evaluate any necessary remedial alternatives to prevent, mitigate or otherwise respond to or remedy any release or threatened release of hazardous substances, pollutants, or contaminants at or from the Site, by conducting a Feasibility Study as more specifically set forth in the SOW in Appendix B to this Settlement Agreement; and (c) to recover Future Response Costs with respect to this Settlement Agreement.

11. The Work is subject to approval by EPA and shall provide all appropriate and necessary information to assess Site conditions and evaluate alternatives to the extent necessary to select any necessary remedy that will be consistent with CERCLA and the National Oil and Hazardous Substances Pollution Contingency Plan, 40 C.F.R. Part 300 ("NCP"). Settling Respondents shall conduct all Work in compliance with CERCLA, the NCP, and all applicable EPA guidances, policies and procedures.

## IV. DEFINITIONS

12. Unless otherwise expressly provided herein, terms used in this Settlement Agreement that are defined in CERCLA or in regulations promulgated under CERCLA shall have the meaning assigned to them in CERCLA or in such regulations. Whenever terms listed below are used in this Settlement Agreement or in the appendices attached hereto and incorporated hereunder, the following definitions shall apply:

a. "CERCLA" shall mean the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended, 42 U.S.C. §§ 9601, *et seq*.

b. "Day" shall mean a calendar day. In computing any period of time under this Settlement Agreement, where the last day would fall on a Saturday, Sunday, or federal holiday, the period shall run until the close of business of the next working day.

c. "Effective Date" shall be the effective date of this Settlement Agreement as provided in Section XXXI. For time periods in the Settlement Agreement that begin on "the Effective Date" of the Settlement Agreement, if the Settling Respondents' Project Coordinator does not receive the written notice of EPA's signing of the Settlement Agreement, pursuant to Paragraph 113 within two days of EPA signature, the EPA will grant a proportionate time extension for complying with any requirements that are initiated by the Effective Date of the Settlement Agreement.

d. "EPA" shall mean the United States Environmental Protection Agency and any successor departments or agencies of the United States.

e. "TCEQ" shall mean the Texas Commission on Environmental Quality and any successor departments or agencies of the State with jurisdiction over the alleged contamination at the Site.

f. "Engineering Controls" shall mean constructed containment barriers or systems that control one or more of the following: downward migration, infiltration or seepage of surface runoff or rain; or natural leaching migration of contaminants through the subsurface over time. Examples include caps, engineered bottom barriers, immobilization processes, and vertical barriers.

g. "Future Response Costs" shall mean all costs, not inconsistent with the NCP, including, but not limited to, direct and indirect costs, that the United States incurs after the Effective Date of this Settlement Agreement until the issuance of the Record of Decision, for the 400 North Richey AOI 1 in reviewing or developing plans, reports and other items pursuant to this Settlement Agreement, verifying the Work, or otherwise implementing, overseeing, or enforcing this Settlement Agreement, including but not limited to, payroll costs, contractor costs, travel costs, laboratory costs, Agency for Toxic Substances and Disease Registry ("ATSDR") costs, the costs incurred pursuant to Paragraph 59 (costs and attorney fees and any monies paid to non-liable parties to secure access, including the amount of just compensation), Paragraph 45 (emergency response)**,** and Paragraph 73 (Work Takeover). Future Response Costs shall also include enforcing obligations extending beyond the issuance of the Record of Decision and imposed by this Settling Agreement, such as record retention. Future Response Costs shall not include costs incurred: (1) by the United States for any future Remedial Design/Remedial Action ("RD/RA") or any other remedial actions at or in connection with the Site or (2) directly by the State using State-appropriated funds and billed directly by the State, at or in connection with the Site.

h. "Institutional Controls" shall mean non-engineered instruments, such as administrative and/or legal controls, that help to minimize the potential for human exposure to contamination and/or protect the integrity of a remedy by limiting land and/or resource use. Examples of institutional controls include easements and covenants, zoning restrictions, special building permit requirements, and well drilling prohibitions.

i. "Interest" shall mean interest at the rate specified for interest on investments of the EPA Hazardous Substance Superfund established by 26 U.S.C. § 9507, compounded annually, in accordance with 42 U.S.C. § 9607(a). The applicable rate of interest shall be the rate in effect at the time the interest accrues. The rate of interest is subject to change on October 1 of each year.

j. "NCP" shall mean the National Oil and Hazardous Substances Pollution Contingency Plan promulgated pursuant to Section 105 of CERCLA, 42 U.S.C. § 9605, codified at 40 C.F.R. Part 300, and any amendments thereto.

k. "Paragraph" shall mean a portion of this Settlement Agreement identified by an Arabic numeral.

l. "Parties" shall mean EPA and the Settling Respondents.

m. "RCRA" shall mean the Resource Conservation and Recovery Act, also known as the Solid Waste Disposal Act, as amended, 42 U.S.C. §§ 6901, et seq.

n. "Receiver" shall mean the person who is appointed as the receiver over the Site by order of the 125th State District Court in Harris County, Texas or any subsequent court with jurisdiction over the receivership at the Site. The receiver as of the effective date of the Settlement Agreement is Eva Engelhart who was appointed on May 22, 2012. A copy of the order appointing the receiver is attached as Appendix D.

o. "Removal Action" shall mean the activities conducted pursuant to the Administrative Settlement Agreement and Order on Consent, U.S. EPA Region 6, CERCLA Docket No. 06-10-11, effective August 25, 2011, and all amendments and addenda thereto (herein later defined as the "August 25, 2011 AOC").

p. "Settling Respondents" shall mean those Parties identified in Appendix A.

q. "Section" shall mean a portion of this Settlement Agreement identified by a Roman numeral.

r. "Settlement Agreement" shall mean this Administrative Settlement Agreement on Consent, the SOW, all appendices attached hereto (listed in Section XXVIII) and all documents incorporated by reference into this document including without limitation EPA-approved submissions. EPA-approved submissions (other than progress reports) are incorporated into and become a part of the Settlement Agreement upon approval by EPA. In the event of conflict between this Settlement Agreement and any appendix or other incorporated documents, this Settlement Agreement shall control.

s. "State" shall mean the State of Texas.

t. "Statement of Work" or "SOW" shall mean the Statement of Work for development of a RI/FS for the Site, as set forth in Appendix B to this Settlement Agreement. The Statement of Work is incorporated into this Settlement Agreement and is an enforceable part of this Settlement Agreement as are any modifications made thereto in accordance with this Settlement Agreement.

u. "400 North Richey Area of Investigation ("Site")" shall mean that portion of the U.S. Oil Recovery Superfund Site located at 400 North Richey Street, Pasadena, Harris County, Texas and depicted generally on the map attached as Appendix C.

v. "Waste Material" shall mean (1) any "hazardous substance" under Section 101(14) of CERCLA, 42 U.S.C. § 9601(14); and (2) any pollutant or contaminant under Section 101(33) of CERCLA, 42 U.S.C. § 9601(33).

w. "Work" shall mean all activities Settling Respondents are required to perform under this Settlement Agreement, except those required by Section XIV (Retention of Records).

## V. FINDINGS OF FACT

13. The Site property is located at 400 North Richey Street in Pasadena, Harris County, Texas, 77506. The approximately 12.2 acre property was most recently used as a used oil processing and waste treatment facility. The property was abandoned by its owner and is now under the custody and control of the Receiver. An office building, security guard shack, and large warehouse (approximately 25,000 square feet in size) are present on the property. The warehouse includes a laboratory, machine shop, and parts warehouse. Approximately 800 55-gallon drums and 212 poly totes (300-400 gallons) containing various industrial wastes are present within the warehouse. A tank farm with approximately 24 aboveground storage tanks containing industrial wastes is located on the north end of the warehouse. A large, concrete-walled aeration basin (also called the bioreactor) is located west of the tank farm. A containment pond is located west of the warehouse and south of the aeration basin. Approximately 225 roll-off boxes are located on the property. The property is located in a highly industrial area that also includes commercial and residential land use.

14. U.S. Oil Recovery L.P. began operations on the property in approximately June 2003 and U.S. Oil Recovery L.L.P. acquired the property in December 2004. Prior to 2004, multiple businesses operated on the property including chemical manufacturing companies (specializing in fertilizers and/or herbicides/pesticides), a cow hide exporter, leather tanner, and companies with unknown operations including storage of various hard goods. Chipman Chemical Company (and successor entities), a predecessor company of Settling Respondent Bayer CropScience Inc., manufactured arsenical, chlorate, and borate pesticide and herbicide products on the USOR property from 1947 to 1972. During that time period, arsenic and other hazardous substances were released into the environment, including the soils, from the Site. Bayer CropScience Inc. is a successor-in-interest to Chipman Chemical Company through acquisitions and mergers of predecessor companies.

15. U.S. Oil Recovery L.P. received municipal and industrial Class I and Class II wastewater, characteristically hazardous waste, used oil and oily sludges, and municipal solid waste at the Site. U.S. Oil Recovery L.P. ceased operations in June of 2010, prior to the state-court appointed Receivership in July of 2010.

16. Hazardous substances present at the property and in waste materials previously handled at the property include volatile organic compounds, semi-volatile organic compounds, pesticides, herbicides, and metals.

17. EPA and its contractors performed inspections of the U.S. Oil Recovery Superfund Site properties at both 200 and 400 N. Richey Street on July 2, 2010 and again on November 9, 2010. The inspections identified and observed the on-going release of hazardous substances from the Site property into Vince Bayou through stormwater runoff.

18. Emergency response and removal actions were performed by EPA in 2010 and 2011, and included general site stabilization; removal of contaminated wastewater from various holding areas; on-site treatment, disposal or recycling of contaminated wastewater; and stabilization and classification of drums, totes and roll-off boxes. Settling Respondents who are

members of the US Oil Recovery Site PRP Group (hereinafter defined) are performing additional removal actions under the August 25, 2011 AOC.

19. During March 2011, the EPA took samples of soil from the U.S. Oil Recovery Superfund Site properties at 200 and 400 N. Richey Street and samples of sediment and surface water from nearby Vince Bayou. The sampling results were used to attribute hazardous substances detected in the samples to historical releases from the U.S. Oil Recovery Superfund Site properties.

20. The predominant threat to human populations, animals or the food chain is the potential for exposure by direct contact with volatile organic compounds, metals, flammables, corrosives, and unknown waste material at the Site and in nearby Vince Bayou and its sediments.

21. On August 25, 2011, a group of potentially responsible parties ("PRPs") entered into an Administrative Settlement Agreement and Order on Consent for a Time-Critical Removal Action ("US Oil Recovery Site PRP Group ") to take over and perform site stabilization activities at the Site. This AOC, and all amendments and addenda thereto is defined as the "August 25, 2011 AOC". The site stabilization is currently ongoing pursuant to the August 25, 2011 AOC. EPA alleges that the Settling Respondent Bayer CropScience Inc., listed in Appendix A number 1, previously owned and/or operated the Site at the time hazardous substances were allegedly released at the Site. EPA alleges that the remainder of the Settling Respondents in Appendix A sent, transported or arranged to have sent or transported material containing hazardous substances found at the Site for disposal, reuse, recycling, or treatment at the Site while it was owned or operated by U.S. Oil Recovery L.L.P. and U.S. Oil Recovery L.P., respectively.

22. On September 14, 2011, the EPA issued a Non-Interference Unilateral Administrative Settlement Agreement ("UAO") to certain parties, including the record owner and operator of the Site property, to prevent any of their on-site activities from interfering with the ongoing site-stabilization effort being performed under the August 25, 2011 AOC.

23. On May 22, 2012, Eva Engelhart was appointed as Receiver for U.S. Oil Recovery, L.P. f/k/a U.S. Oil Recovery LLC, MCC Recycling LLP f/k/a US Oil Recovery #2, LLP, U.S. Oil Recovery L.L.P. (Texas Secretary of State Registration No. 800159885), U.S. Oil Recovery L.L.P. (Texas Secretary of State Registration No. 800458414) by order of the 125$^{th}$ State District Court in Harris County, Texas. Pursuant to this order, all real or personal property of these entities is in the custody and control of the Receiver, including the Site. The Receiver's duties include, but are not limited to negotiating and granting access to the Site, assisting the U.S. Oil Recovery Site PRP Group in connection with the cost-effective remediation of the Site as well as protecting and marketing the Site's assets. The Receiver identified in Appendix A has current custody and control over the Site, and is identified as a Settling Respondent solely for purposes of access to the Site and the imposition of future institutional controls, if any, for the Site.

24. The Site was listed on the National Priorities List ("NPL") pursuant to CERCLA Section 105, 42 U.S.C. § 9605, on September 18, 2012.

## VI. CONCLUSIONS OF LAW AND DETERMINATIONS

Based on the Findings of Fact set forth above, EPA has determined that:

25. The 400 North Richey Area of Investigation is a "facility" as defined in Section 101(9) of CERCLA, 42 U.S.C. § 9601(9).

26. The contamination found at the Site, as identified in the Findings of Fact above, includes "hazardous substances" as defined in Section 101(14) of CERCLA, 42 U.S.C. § 9601(14).

27. The conditions described in the Findings of Fact above constitute an actual and/or threatened "release" of a hazardous substance from the facility as defined in Section 101(22) of CERCLA, 42 U.S.C. § 9601(22).

28. Each Settling Respondent is a "person" as defined in Section 101(21) of CERCLA, 42 U.S.C. § 9601(21).

29. Settling Respondents are responsible parties under Sections 104, 107 and 122 of CERCLA, 42 U.S.C. §§ 9604, 9607 and 9622. Each Settling Respondent is either a person who arranged for disposal or transport for disposal of hazardous substances at the Site or is a person who at the time of disposal of any hazardous substances owned or operated the Site. Each Settling Respondent therefore may be liable under Section 107(a) of CERCLA, 42 U.S.C. § 9607(a).

30. The actions required by this Settlement Agreement are necessary to protect the public health, welfare or the environment, are in the public interest, 42 U.S.C.§ 9622(a), are consistent with CERCLA and the NCP, 42 U.S.C.§§ 9604(a)(1), 9622(a), and will expedite effective remedial action and minimize litigation, 42 U.S.C. § 9622(a).

31. EPA has determined that Settling Respondents are qualified to conduct the RI/FS within the meaning of Section 104(a) of CERCLA, 42 U.S.C. § 9604(a), and will carry out the Work properly and promptly, in accordance with Sections 104(a) and 122(a) of CERCLA, 42 U.S.C. §§ 9604(a) and 9622(a), if Settling Respondents comply with the terms of this Settlement Agreement.

## VII. SETTLEMENT AGREEMENT AND ORDER

32. Based upon the foregoing Findings of Fact and Conclusions of Law and Determinations, it is hereby Ordered and Agreed that Settling Respondents shall comply with all provisions of this Settlement Agreement, including, but not limited to, all appendices to this Settlement Agreement and all documents incorporated by reference into this Settlement Agreement

33. Pursuant to Paragraph 4, Settling Respondents shall complete the on-going Removal Action at the 400 North Richey AOI before the field Work under this Settlement Agreement is commenced.

## VIII. DESIGNATION OF CONTRACTORS AND PROJECT COORDINATORS

34. Selection of Contractors, Personnel. All Work performed under this Settlement Agreement shall be under the direction and supervision of qualified personnel. Within 30 days of the Effective Date of this Settlement Agreement, and before the Work outlined below begins, Settling Respondents shall notify EPA in writing of the names, titles, and qualifications of the lead/supervisory personnel, for the contractors, subcontractors, consultants and laboratories retained as of that date to carry out such Work. Settling Respondents may retain additional contractors, subcontractors, consultants, and laboratories to carry out the Work after the Work commences. Settling Respondents shall notify EPA in writing of the names, titles and qualifications of the lead/supervisory personnel within 30 days after the personnel are retained. With respect to any proposed contractor to be used in carrying out the Work, Settling Respondents shall demonstrate that the proposed contractor has a quality system which complies with ANSI/ASQC E4-1994, "Specifications and Guidelines for Quality Systems for Environmental Data Collection and Environmental Technology Programs," (American National Standard, January 5, 1995, or most recent version), by submitting a copy of the proposed contractor's Quality Management Plan ("QMP"). The QMP should be prepared in accordance with "EPA Requirements for Quality Management Plans (QA/R-2)," (EPA/240/B-01/002, March 2001 or subsequently issued guidance) or equivalent documentation as determined by EPA. Subcontractors or contractors may work under the oversight of the primary contractor's QMP and are not required to submit their own individual QMP to EPA. The qualifications of the lead/supervisory personnel for the contractors, subcontractors, consultants and laboratories undertaking the Work for Settling Respondents shall be subject to EPA's review, for verification that such persons meet minimum technical background and experience requirements. If EPA disapproves in writing of any person's technical qualifications, Settling Respondents shall notify EPA of the identity and qualifications of the replacements within 30 days of the written notice. If EPA subsequently disapproves of the replacement, EPA reserves the right to terminate this Settlement Agreement and to conduct a complete RI/FS, and to seek reimbursement for costs and penalties from Settling Respondents. During the course of the RI/FS, Settling Respondents shall notify EPA in writing of any changes or additions in the lead/supervisory personnel used to carry out such Work, providing their names, titles, and qualifications. EPA shall have the same right to disapprove changes and additions to the lead/supervisory personnel as it has hereunder regarding the initial notification.

35. Settling Respondents designate Eric Pastor of Pastor, Behling & Wheeler, LLC as their Project Coordinator who shall be responsible for administration of all actions by Settling Respondents required by this Settlement Agreement. The Project Coordinator's address, telephone number and e-mail are as follows:

Mr. Eric Pastor
Pastor, Behling & Wheeler, LLC
2201 Double Creek Drive, Suite 4004
Round Rock, Texas 78664
(512) 671-3434
eric.pastor@pbwllc.com

The Project Coordinator or his representative shall be present on Site or readily available during Site Work. EPA hereby approves the designated Project Coordinator but retains the right to disapprove of the designated Project Coordinator in the future. If EPA disapproves of the designated Project Coordinator, Settling Respondents shall retain a different Project Coordinator and shall notify EPA of that person's name, address, telephone number and qualifications within 14 days following EPA's disapproval. Settling Respondents shall have the right to change their Project Coordinator, subject to EPA's right to disapprove. Settling Respondents shall notify EPA seven (7) days before such a change is made. The initial notification may be made orally, but shall be promptly followed by a written notification. Receipt by Settling Respondents' Project Coordinator of any notice or communication from EPA relating to this Settlement Agreement shall constitute receipt by Settling Respondents. Documents to be submitted to the Settling Respondents shall be sent to Settling Respondents' Project Coordinator at the address shown above.

36. EPA has designated Raji Josiam of the EPA Region 6 Superfund Division as its Remedial Project Manager ("RPM"). EPA will notify Settling Respondents of a change of its designated RPM. Except as otherwise provided in this Settlement Agreement, Settling Respondents shall direct all submissions required by this Settlement Agreement to the RPM at the US EPA Region 6, 6SF-RA, 1445 Ross Ave., Dallas, TX 75202 or by electronic mail if so directed by the RPM.

37. EPA's RPM shall have the authority lawfully vested in a Remedial Project Manager ("RPM") and On-Scene Coordinator ("OSC") by the NCP. In addition, EPA's RPM shall have the authority consistent with the NCP, to halt any Work, and to take any necessary response action when s/he determines that conditions at the Site may present an immediate endangerment to public health or welfare or the environment. EPA's RPM may approve changes to the submission dates for the deliverables under this Settlement Agreement. This includes those deliverables described in Paragraph 48. The absence of the EPA RPM from the area under study pursuant to this Settlement Agreement shall not be cause for the stoppage or delay of Work.

38. EPA shall arrange for a qualified person to assist in its oversight and review of the conduct of the RI/FS, as required by Section 104(a) of CERCLA, 42 U.S.C. Section 9604(a). Such person shall have the authority to observe Work and make inquiries in the absence of EPA, but not to modify the RI/FS Work Plan.

## IX. WORK TO BE PERFORMED

39. Settling Respondents shall conduct the RI/FS in accordance with the provisions of this Settlement Agreement, the SOW, CERCLA, the NCP and applicable EPA guidance, including, but not limited to the "Interim Final Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA" (OSWER Directive # 9355.3-01, October 1988 or subsequently issued guidance), "Guidance for Data Useability in Risk Assessment" (OSWER Directive #9285.7-05, October 1990 or subsequently issued applicable guidance), and applicable guidance referenced therein, and applicable guidance referenced in the SOW, as may be amended or modified by EPA. The Remedial Investigation ("RI") shall consist of collecting data to characterize site conditions, determining the presence, nature and extent of the contamination

at or from the Site, assessing risk to human health and the environment and conducting treatability testing as necessary to evaluate the potential performance and cost of any necessary treatment technologies that may be considered. The Feasibility Study ("FS") shall determine and evaluate (based on treatability testing, where appropriate) alternatives for remedial action to prevent, mitigate or otherwise respond to or remedy any release or threatened release of hazardous substances, pollutants, or contaminants at or from the Site. The alternatives evaluated must include, but shall not be limited to, the range of alternatives described in the NCP, and shall include remedial actions that utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. In evaluating alternatives, Settling Respondents shall address the factors required to be taken into account by Section 121 of CERCLA, 42 U.S.C. § 9621, and Section 300.430(e) of the NCP, 40 C.F.R. § 300.430(e). Upon request by EPA, Settling Respondents shall submit in electronic form all portions of any plan, report or other deliverable Settling Respondents are required to submit pursuant to provisions of this Settlement Agreement.

40. Upon receipt of the draft Feasibility Study ("FS") report, the EPA will evaluate, as necessary, the estimates of the risk to the public and environment that are expected to remain after a particular remedial alternative has been completed and will evaluate the durability, reliability and effectiveness of any proposed Institutional Controls.

41. Modification of the RI/FS Work Plan.

a. If at any time during the RI/FS process, Settling Respondents identify a need for additional data, Settling Respondents shall submit a notice documenting the need for additional data to the EPA Project Coordinator within thirty (30) days of identification. The EPA in its discretion, after discussion with Settling Respondents' Project Coordinator, will determine whether the additional data will be collected by Settling Respondents and whether it will be incorporated into plans, reports and other deliverables.

b. In the event of unanticipated or changed circumstances at the Site, Settling Respondents shall notify the EPA Project Coordinator by telephone within 24 hours of discovery of the unanticipated or changed circumstances. In the event that the EPA determines that the unanticipated or changed circumstances warrant changes in the RI/FS Work Plan, the EPA shall, after discussion with Settling Respondents' Project Coordinator, modify or amend the RI/FS Work Plan in writing accordingly. Settling Respondents shall perform the RI/FS Work Plan as modified or amended.

c. The EPA may determine that in addition to tasks defined in the initially approved RI/FS Work Plan, other additional Work may be necessary to accomplish the objectives of the RI/FS. Settling Respondents agree to perform these response actions in addition to those required by the initially approved RI/FS Work Plan, including any approved modifications, if the EPA determines that such actions are necessary for a complete RI/FS.

d. Settling Respondents shall confirm their willingness to perform or decline to perform the additional Work in writing to the EPA within thirty (30) days of receipt of the EPA request. If Settling Respondents object to any modification determined by the EPA to be necessary pursuant to this Paragraph, Settling Respondents may seek dispute resolution

pursuant to Section XV (Dispute Resolution). The SOW and/or RI/FS Work Plan shall be modified in accordance with the final resolution of the dispute.

e. Settling Respondents shall complete the additional Work agreed to or in accordance with the dispute final resolution according to the standards, specifications, and schedule set forth or approved by the EPA in a written modification to the RI/FS Work Plan or written RI/FS Work Plan supplement. The EPA reserves the right to conduct the Work itself at any point, to seek reimbursement from Settling Respondents, and/or to seek any other appropriate relief.

f. Nothing in this Paragraph shall be construed to limit the EPA's authority to reasonably require performance of further response actions at the Site.

42. Off-Site Shipment of Waste Material. Prior to any off-site shipment of Waste Material pursuant to the Work under this Settlement Agreement from the Site to an out-of-state waste management facility, Settling Respondents shall provide written notification of such shipment of Waste Material to the appropriate state environmental official in the receiving facility's state and to the EPA's Designated Project Coordinator. However, this notification requirement shall not apply to any off-site shipments when the total volume of all such shipments will not exceed 10 cubic yards.

a. Settling Respondents shall include in the written notification the following information: (1) the name and location of the facility to which the Waste Material is to be shipped; (2) the type and quantity of the Waste Material to be shipped; (3) the expected schedule for the shipment of the Waste Material; and (4) the method of transportation. Settling Respondents shall notify the state in which the planned receiving facility is located of major changes in the shipment plan, such as a decision to ship the Waste Material to another facility within the same state, or to a facility in another state.

b. The identity of the receiving facility and state will be determined by Settling Respondents following the award of the contract for the remedial investigation and feasibility study. Settling Respondents shall provide the information required by Subparagraph 41.a and 41.c as soon as practicable after the award of the contract and before the Waste Material is actually shipped.

c. Before shipping any hazardous substances, pollutants, or contaminants from the Site to an off-site location, Settling Respondents shall obtain the EPA's certification that the proposed receiving facility is operating in compliance with the requirements of CERCLA Section 121(d)(3), 42 U.S.C. § 9621(d)(3), and 40 C.F.R. § 300.440. Settling Respondents shall only send hazardous substances, pollutants, or contaminants from the Site to an off-site facility that complies with the requirements of the statutory provision and regulation cited in the preceding sentence.

43. Meetings. Upon fourteen (14) days prior written notice from EPA, Settling Respondents shall make presentations at, and participate in, meetings at the request of the EPA during the initiation, conduct, and completion of the RI/FS. In addition to discussion of the

technical aspects of the RI/FS, topics will include anticipated problems or new issues. Meetings will be scheduled at the EPA's discretion or upon request of Settling Respondents.

44. Bi-Monthly Progress Reports. In addition to the plans, reports and other deliverables set forth in this Settlement Agreement, Settling Respondents shall provide to the EPA the first Bi-Monthly Progress Reports as specified in the Final RI/FS Work Plan. Thereafter, the Bi-Monthly Progress Reports shall be due by the 15th day of every other following month. The obligation to submit these Bi-Monthly Progress Reports shall terminate upon the issuance of the Record of Decision for the Site. The Bi-Monthly Progress Reports can be submitted electronically. At a minimum, these progress reports shall (1) describe the actions which have been taken to comply with this Settlement Agreement during the preceding two-month period, (2) include a summary of all quality assured results of sampling and tests and all other quality assured data received by Settling Respondents for the Site during the reporting period, (3) describe Work planned for the next two months with schedules relating such Work to the overall project schedule for RI/FS completion, and (4) describe all problems encountered and any anticipated problems, any actual or anticipated delays, and solutions developed and implemented to address any actual or anticipated problems or delays.

45. Emergency Response and Notification of Releases.

a. In the event of any action or occurrence during performance of the Work which causes or threatens a release of Waste Material from the Site that constitutes an emergency situation or may present an immediate threat to public health or welfare or the environment, Settling Respondents shall immediately take all appropriate action. Settling Respondents shall take these actions in accordance with all applicable provisions of this Settlement Agreement, including, but not limited to, the Health and Safety Plan, in order to prevent, abate or minimize such release or endangerment caused or threatened by the release. Settling Respondents shall also immediately notify the EPA Project Coordinator or, in the event of his/her unavailability, On Scene Coordinator ("OSC"), Adam Adams at (214) 665-2779, or the Regional Duty Officer at (866) 372-7745 of the incident or Site conditions. In the event that Settling Respondents fail to take appropriate response action as required by this Paragraph, and the EPA takes such action instead, Settling Respondents shall reimburse the EPA all costs of the response action not inconsistent with the NCP pursuant to Section XVIII (Payment of Future Response Costs).

b. In addition, in the event of any release of a hazardous substance from the Site, which pursuant to Section 103(a) of CERCLA, 42 U.S.C. § 9603(a), requires reporting to the National Response Center, Settling Respondents shall immediately notify first the National Response Center at (800) 424-8802 and then the EPA Project Coordinator. Settling Respondents shall submit a written report to the EPA within 7 days after each such release, setting forth the events that occurred and the measures taken or to be taken to mitigate any release or endangerment caused or threatened by the release and to prevent the reoccurrence of such a release. This reporting requirement is in addition to, and not in lieu of, reporting under Section 103(c) of CERCLA, 42 U.S.C. § 9603(c), and Section 304 of the Emergency Planning and Community Right-To-Know Act of 1986, 42 U.S.C. § 11004, et seq.

## X. EPA APPROVAL OF PLANS AND OTHER SUBMISSIONS

46. After review of any plan, report or other item that is required to be submitted for approval pursuant to this Settlement Agreement, in a notice to Settling Respondents the EPA will: (a) approve, in whole or in part, the submission; (b) approve the submission upon specified conditions; (c) modify the submission to cure the deficiencies; (d) disapprove, in whole or in part, the submission, directing that Settling Respondents modify the submission; or (e) any combination of the above. However, the EPA shall not modify a submission without first providing Settling Respondents at least one notice of deficiency and an opportunity to cure within sixty (60) days after completing discussions of the EPA's comments on the submission, except where to do so would cause serious disruption to the Work or where previous submission(s) have been disapproved due to material defects.

47. In the event of approval, approval upon conditions, or modification by the EPA, pursuant to Subparagraph 41(a), (b), (c) or (e), Settling Respondents shall proceed to take any action required by the plan, report or other deliverable, as approved or modified by the EPA subject only to their right to invoke the Dispute Resolution procedures set forth in Section XV (Dispute Resolution) with respect to the modifications or conditions made by the EPA. Following EPA approval or modification of a submission or portion thereof, Settling Respondents shall not thereafter alter or amend such submission or portion thereof unless directed by the EPA. In the event that the EPA modifies the submission to cure the deficiencies pursuant to Subparagraph 41(c) and the submission had a material defect, the EPA retains the right to seek stipulated penalties, as provided in Section XVI (Stipulated Penalties).

48. Resubmission.

a. Upon receipt of a notice of disapproval, Settling Respondents shall within sixty (60) days after completing discussions with EPA regarding its notice of disapproval), or such longer time as specified by the EPA in such notice, correct the deficiencies and resubmit the plan, report, or other deliverable for approval. While stipulated penalties applicable to the submission shall accrue during the 60-day period or otherwise specified period, such penalties shall not be payable unless the resubmission is disapproved or modified due to a material defect as provided in Paragraphs 49 and 50.

b. Notwithstanding receipt of a notice of disapproval, Settling Respondents shall proceed to take any action required by any non-deficient portion of the submission, unless otherwise directed by the EPA. Implementation of any non-deficient portion of a submission shall not relieve Settling Respondents of any liability for stipulated penalties under Section XVI (Stipulated Penalties).

c. Settling Respondents shall not proceed further with any subsequent activities or tasks until receiving EPA approval, approval on condition or modification of the following deliverables: (i) RI/FS Work Plan and Sampling and Analysis Plan; (ii) Draft Remedial Investigation Report; (iii) if EPA, after discussion with the Settling Respondents determines that treatability studies are required Draft Treatability Testing Work Plan and Sampling and Analysis Plan; and (iv) Draft Feasibility Study Report. While awaiting EPA approval, approval on condition or modification of these deliverables, Settling Respondents

shall proceed with all other tasks and activities which may be conducted independently of these deliverables, in accordance with the schedule set forth under this Settlement Agreement.

d. For all remaining deliverables not listed above in Subparagraph 48.c., Settling Respondents shall proceed will all subsequent tasks, activities and deliverables without awaiting EPA approval on the submitted deliverable. The EPA reserves the right to stop Settling Respondents from proceeding further, either temporarily or permanently, on any task, activity or deliverable at any point during the RI/FS. If EPA decides to stop work on a task, activity, or deliverable, Settling Respondents shall not be subject to stipulated penalties for the failure to perform such work during the time period covered by the work stoppage if the failure to perform results solely from the EPA decision to stop work and the EPA decision to stop work is not related to a violation of this Settlement Agreement by Settling Respondents.

49. If the EPA disapproves a resubmitted plan, report or other deliverable, or portion thereof, the EPA may again direct Settling Respondents to correct the deficiencies. The EPA shall also retain the right to modify or develop the plan, report or other deliverable. Settling Respondents shall implement any such plan, report, or deliverable as corrected, modified or developed by the EPA, subject only to Settling Respondents' right to invoke the procedures set forth in Section XV (Dispute Resolution).

50. If upon resubmission, a plan, report, or other deliverable is disapproved or modified by the EPA due to a material defect, Settling Respondents shall be deemed to have failed to submit such plan, report, or other deliverable timely and adequately unless Settling Respondents invoke the dispute resolution procedures in accordance with Section XV (Dispute Resolution) and the EPA's action is revoked or substantially modified pursuant to a Dispute Resolution decision issued by the EPA or superseded by an agreement reached pursuant to that Section. The provisions of Section XV (Dispute Resolution) and Section XVI (Stipulated Penalties) shall govern the implementation of the Work and accrual and payment of any stipulated penalties during Dispute Resolution.

51. In the event the EPA takes over some of the tasks, but not the preparation of the RI Report or the FS Report, Settling Respondents shall incorporate and integrate information supplied by the EPA into the final reports.

52. All plans, reports, and other deliverables submitted to the EPA under this Settlement Agreement shall, upon approval or modification by the EPA, be incorporated into and enforceable under this Settlement Agreement. In the event the EPA approves or modifies a portion of a plan, report, or other deliverable submitted to the EPA under this Settlement Agreement, the approved or modified portion shall be incorporated into and enforceable under this Settlement Agreement.

53. Neither failure of the EPA to expressly approve or disapprove of Settling Respondents' submissions within a specified time period, nor the absence of comments, shall be construed as approval by the EPA. Whether or not the EPA gives express approval for Settling Respondents' deliverables, Settling Respondents are responsible for preparing deliverables acceptable to the EPA.

## XI. QUALITY ASSURANCE, SAMPLING, AND ACCESS TO INFORMATION

54. Quality Assurance. Settling Respondents shall assure that Work performed, samples taken and analyses conducted conform to the requirements of the SOW, the QAPP and applicable guidances identified therein. Settling Respondents will assure that field personnel used by Settling Respondents are properly trained in the use of field equipment and in chain of custody procedures. Settling Respondents shall only use laboratories which have a documented quality system that complies with "EPA Requirements for Quality Management Plans (QA/R-2)" (EPA/240/B-01/002, March 2001) or equivalent documentation as determined by EPA.

55. Sampling.

a. All results of sampling, tests, modeling or other quality assured data, including raw data if requested by EPA, generated by Settling Respondents, or on Settling Respondents' behalf, during the period that this Settlement Agreement is effective, shall be submitted to the EPA in the next bi-monthly progress report as described in Paragraph 44 of this Settlement Agreement. The EPA will make available to Settling Respondents validated data generated by the EPA unless it is exempt from disclosure by any federal or state law or regulation.

b. Settling Respondents shall verbally (by phone or e-mail) notify the EPA at least fifteen days prior to conducting significant field events as described in the SOW, RI/FS Work Plan or Sampling and Analysis Plan. At the EPA's oral or written request, or upon such request by the EPA's oversight assistant, Settling Respondents shall allow split or duplicate samples to be taken by the EPA (and its authorized representatives) of any samples collected in implementing this Settlement Agreement. All split samples shall be analyzed by the methods identified in the QAPP.

56. Access to Information.

a. Subject to Subparagraph b and c., Settling Respondents shall provide to the EPA, upon request, copies of all documents and information within their possession or control or that of their contractors or consultants relating to the Work, including, but not limited to, sampling, analysis, chain of custody records, manifests, trucking logs, receipts, reports, sample traffic routing, correspondence, or other documents or information related to the Work. Settling Respondents shall also make available to the EPA, for purposes of investigation, information gathering, or testimony, their employees, agents, or representatives with knowledge of relevant facts concerning the performance of the Work.

b. Settling Respondents may assert business confidentiality claims covering part or all of the documents or information submitted to the EPA under this Settlement Agreement to the extent permitted by and in accordance with Section 104(e)(7) of CERCLA, 42 U.S.C. § 9604(e)(7), and 40 C.F.R. § 2.203(b). Documents or information determined to be confidential by the EPA will be afforded the protection specified in 40 C.F.R. Part 2, Subpart B. If no claim of confidentiality accompanies documents or information when it is submitted to the EPA, or if the EPA has notified Settling Respondents that the documents or information are not confidential under the standards of Section 104(e)(7) of CERCLA or 40 C.F.R. Part 2, Subpart

B, the public may be given access to such documents or information without further notice to Settling Respondents. Settling Respondents shall segregate and clearly identify all documents or information submitted under this Settlement Agreement for which Settling Respondents assert business confidentiality claims.

c. Settling Respondents may assert that certain documents, records and other information are privileged under the attorney-client privilege or any other privilege recognized by federal law. If the Settling Respondents assert such a privilege in lieu of providing documents, they shall provide the EPA with the following: 1) the title of the document, record, or information; 2) the date of the document, record, or information; 3) the name and title of the author of the document, record, or information; 4) the name and title of each addressee and recipient; 5) a description of the contents of the document, record, or information; and 6) the privilege asserted by Settling Respondents. However, no documents, reports or other information created or generated pursuant to the requirements of this Settlement Agreement shall be withheld on the grounds that they are privileged.

d. No claim of confidentiality shall be made with respect to any data, including, but not limited to, all sampling, analytical, monitoring, hydrogeologic, scientific, chemical, or engineering data, or any other documents or information evidencing conditions at or around the Site.

57. In entering into this Settlement Agreement, Settling Respondents waive any objections to any data gathered, generated, or evaluated by the EPA, the State or Settling Respondents in the performance or oversight of the Work that has been verified according to the quality assurance/quality control ("QA/QC") procedures required by the Settlement Agreement or any EPA-approved RI/FS Work Plans or Sampling and Analysis Plans. If Settling Respondents object to any other data relating to the RI/FS, Settling Respondents shall submit to the EPA a report that specifically identifies and explains its objections, describes the acceptable uses of the data, if any, and identifies any limitations to the use of the data. The report must be submitted to the EPA within thirty (30) days of the bi-monthly progress report containing the data or within forty-five (45) days of Settling Respondents' receipt of any other data.

## XII. SITE ACCESS AND INSTITUTIONAL CONTROLS

58. If the Site, or any other property where access is needed to implement this Settlement Agreement, is owned or controlled by any of Settling Respondents, such Settling Respondents shall, commencing on the Effective Date, provide the EPA and all of the non-owner Settling Respondents and their representatives, including contractors, with access at all reasonable times to the Site, or such other property, for the purpose of conducting any activity related to this Settlement Agreement.

59. The Receiver shall provide the EPA and all of the non-owner Settling Respondents and their representatives, including contractors, with access at all reasonable times to the portions of the Site under Receiver's custody and control for the purpose of conducting any activity related to this Settlement Agreement. Where any action under this Settlement Agreement is to be performed in areas owned by or in possession of someone other than Settling Respondents, Settling Respondents shall use their best efforts to obtain all necessary access

agreements within forty-five (45) days after the Scoping Phase Meeting, or as otherwise specified in writing by the EPA Project Coordinator. Settling Respondents shall immediately notify the EPA if after using their best efforts they are unable to obtain such agreements. For purposes of this Paragraph and Paragraph 81 (Force Majeure), "best efforts" means the reasonable efforts that a prudent person would use in similar circumstances as to accomplish the goal in a timely manner. "Best Efforts" include the payment of reasonable sums of money in consideration of access. However, no payment of any sums shall be required if the property owner is also a potentially responsible party at the Site (or that party's successor-in-interest or assignee). Best Efforts" do not require the Settling Respondents to undertake legislative actions, eminent domain, or other legal proceedings available to the State of Texas to acquire access. Settling Respondents shall describe in writing their efforts to obtain access. If Settling Respondents cannot obtain access agreements, the EPA may either (i) obtain access for Settling Respondents or assist Settling Respondents in gaining access, to the extent necessary to effectuate the response actions described herein, using such means as the EPA deems appropriate; (ii) perform those tasks or activities with EPA contractors; or (iii) terminate the Settlement Agreement. Settling Respondents shall reimburse the EPA for all costs and attorney's fees incurred by the United States in obtaining such access, in accordance with the procedures in Section XVIII (Payment of Future Response Costs). If the EPA performs those tasks or activities with EPA contractors and does not terminate the Settlement Agreement, Settling Respondents shall perform all other tasks or activities not requiring access to that property, and shall reimburse the EPA for all costs incurred in performing such tasks or activities. Settling Respondents shall integrate the results of any such tasks or activities undertaken by the EPA into its plans, reports and other deliverables.

60. The Receiver agrees to the imposition of institutional controls upon the Site, including but not limited to restrictions upon the future use of the Site, the use of groundwater beneath the Site, and security and restrictions on access to the Site should such measures be identified as appropriate components of alternative remedies for the Site during the RI/FS. Nothing in this Settlement Agreement shall preclude Receiver from imposing such restrictions on the Site at an earlier date.

61. Notwithstanding any provision of this Settlement Agreement, the EPA retains all of its access authorities and rights, including enforcement authorities related thereto, under CERCLA, RCRA, and any other applicable statutes or regulations.

## XIII. COMPLIANCE WITH OTHER LAWS

62. Settling Respondents shall comply with all applicable local, state and federal laws and regulations when performing the RI/FS. No local, state, or federal permit shall be required for any portion of any action conducted entirely on-site, including studies, if the action is selected and carried out in compliance with Section 121 of CERCLA, 42 U.S.C. § 9621. Where any portion of the Work is to be conducted off-site and requires a federal or state permit or approval, Settling Respondents shall submit timely and complete applications and take all other actions necessary to obtain and to comply with all such permits or approvals. This Settlement Agreement is not, and shall not be construed to be, a permit issued pursuant to any federal or state statute or regulation.

## XIV. RETENTION OF RECORDS

63. During the pendency of this Settlement Agreement and for a minimum of ten (10) years after commencement of construction of any remedial action, each Settling Respondent or the Settling Respondents' technical or other consultant shall preserve and retain all non-identical copies of documents, records, and other information (including documents, records, or other information in electronic form) now in its possession or control or which come into its possession or control that relate in any manner to the performance of the Work or the liability of any person under CERCLA with respect to the Site, regardless of any corporate retention policy to the contrary. By way of example and explanation, each Settling Respondent may maintain, as its sole responsibility, documents relating to any person's liability under CERCLA with respect to the Site, while the Settling Respondents' consultant may maintain, as its sole responsibility, the documents relating in any manner to the performance of the Work with respect to the Site. Settling Respondents or Settling Respondents' consultant may, if EPA approves, retain only electronic copies of records after EPA approval of the completion of the construction of any remedial action.

The TCEQ has custody and control of documents that were maintained at the Site by the Site owner(s)/operator(s). These documents are maintained at a secure location and access to the documents is monitored. These documents are not subject to the provisions of this Section.

64. At the conclusion of this document retention period, Settling Respondents or their technical or other consultant shall notify the EPA at least 90 days prior to the destruction of any such documents, records or other information, and, upon request by the EPA, Settling Respondents shall deliver any such documents, records, or other information to the EPA. Settling Respondents may assert that certain documents, records, and other information are privileged under the attorney-client privilege, attorney work product doctrine or any other privilege recognized by federal law. If Settling Respondents assert such a privilege, they shall provide the EPA with the following: 1) the title of the document, record, or other information; 2) the date of the document, record, or other information; 3) the name and title of the author of the document, record, or other information; 4) the name and title of each addressee and recipient; 5) a description of the subject of the document, record, or other information; and 6) the privilege or doctrine asserted by Settling Respondents. However, no documents, records or other information specifically created or generated to comply with the requirements of this Settlement Agreement shall be withheld on the grounds that they are privileged.

65. Each Settling Respondent hereby certifies individually that to the best of its knowledge and belief, after thorough inquiry, it has not altered, mutilated, discarded, destroyed or otherwise disposed of any records, documents or other information (other than identical copies) relating to its potential liability regarding the Site since notification of potential liability by the EPA or the filing of suit against it regarding the Site and that it has fully complied with any and all EPA requests for information pursuant to Sections 104(e) and 122(e) of CERCLA, 42 U.S.C. §§ 9604(e) and 9622(e), and Section 3007 of RCRA, 42 U.S.C. § 6927 regarding the Site.

## XV. DISPUTE RESOLUTION

66. Unless otherwise expressly provided for in this Settlement Agreement, the dispute resolution procedures of this Section shall be the exclusive mechanism for resolving disputes arising under this Settlement Agreement. The Parties shall attempt to resolve any disagreements concerning this Settlement Agreement expeditiously and informally.

67. If Settling Respondents object to any EPA action taken pursuant to this Settlement Agreement, including billings for Future Response Costs, they shall notify the EPA in writing of their objection(s) within 30 days (except as provided in Paragraph 87 where Settling Respondents have within forty-five (45) days of receipt of EPA's bill for Future Response Costs to notify EPA of their objections to payment) of such action, unless the objection(s) has/have been resolved informally. The EPA and Settling Respondents shall have 60 days from the EPA's receipt of Settling Respondents' written objection(s) to resolve the dispute (the "Negotiation Period"). The Negotiation Period may be extended at the sole discretion of the EPA. Such extension shall not be unreasonably denied and may be granted orally but must be confirmed in writing.

68. Any agreement reached by the Parties pursuant to this Section shall be in writing and shall, upon signature by the Parties, be incorporated into and become an enforceable part of this Settlement Agreement. If the Parties are unable to reach an agreement within the Negotiation Period, the Parties shall be afforded the opportunity within fifteen (15) days after the end of the Negotiation Period to present their respective positions in writing and through oral presentation to the EPA Region 6 Superfund Division Director who will issue a written decision. The EPA's decision shall be incorporated into and become an enforceable part of this Settlement Agreement. Settling Respondents' obligations under this Settlement Agreement shall not be tolled by submission of any objection for dispute resolution under this Section unless otherwise agreed to by EPA, and such agreement shall not be unreasonably withheld. Following resolution of the dispute, as provided by this Section, Respondents shall fulfill the requirement that was the subject of the dispute in accordance with the agreement reached or with the EPA's decision, whichever occurs, and regardless of whether Settling Respondents agree with the decision. In the event that the Settling Respondents prevail on the issue in dispute, no stipulated penalties accruing for the disputed issue shall be assessed.

## XVI. STIPULATED PENALTIES

69. Settling Respondents shall be liable to the EPA for stipulated penalties in the amounts set forth in Paragraphs 70 and 71 for failure to comply with any of the requirements of this Settlement Agreement specified below unless excused under Section XVII (Force Majeure). "Compliance" by Settling Respondents shall include completion of the Work or any activities contemplated under any RI/FS Work Plan or other plan approved under this Settlement Agreement identified below, in accordance with all applicable requirements of law, this Settlement Agreement, the SOW, and any plans or other documents approved by the EPA pursuant to this Settlement Agreement and within the specified time schedules established by and approved under this Settlement Agreement.

70. Stipulated Penalty Amounts - Work.

a. The following stipulated penalties shall accrue per day for failure to timely submit the reports identified in Subparagraph 70(b) in accordance with the schedule in this Settlement Agreement and the RI/FS Work Plan, unless such schedule is amended by EPA:

| Penalty Per Violation Per Day | Period of Noncompliance |
|---|---|
| $ 500 | 1st through 14th day |
| $ 750 | 15th through 30th day |
| $ 1000 | 31st day and beyond |

b. Compliance Milestones

(1) An original RI/FS Work Plan
(2) An original RI/FS Site Health and Safety Plan
(3) An original Baseline Human Health Risk Assessment Report
(4) An original Screening Level Ecological Risk Assessment Report
(5) An original Treatability Study Report, if treatability studies are performed
(6) An original Remedial Investigation Report
(7) An original Feasibility Study Report

71. Stipulated Penalty Amounts – Other Documents.

The following stipulated penalties shall accrue per violation per day for failure to submit reports or other written documents (other than those required by this Paragraph 70(b)(1)-(7)) pursuant to Paragraphs 39 through 45 in accordance with the schedule in this Settlement Agreement and the RI/FS Work Plan:

| Penalty Per Violation Per Day | Period of Noncompliance |
|---|---|
| $ 500 | 1st through 14th day |
| $ 750 | 15th through 30th day |
| $ 1000 | 31st day and beyond |

72. Stipulated Penalty Amounts – Payment of Costs.

The following stipulated penalties shall accrue per violation per day for failure to pay Future Response Costs in accordance with the schedule in this Settlement Agreement: After the 30th day payment is not timely received, a penalty of $250 per day will be assessed.

73. In the event that the EPA assumes performance of a portion or all of the Work pursuant to Paragraph 91 of Section XX (Reservation of Rights by the EPA) and EPA's decision

to assume performance is upheld in dispute resolution, Settling Respondents shall be liable for a stipulated penalty in the amount of $250,000.

74. All penalties shall begin to accrue on the day after the complete performance is due or the day a violation occurs, and shall continue to accrue through the final day of the correction of the noncompliance or completion of the activity. However, stipulated penalties shall not accrue: (1) with respect to a deficient submission under Section X (EPA Approval of Plans and Other Submissions), until 16 days following receipt of notice of the deficiency by Settling Respondents (2) with respect to a decision by the EPA Region Superfund Division Director designated in Paragraph 68 of Section XV (Dispute Resolution), during the Negotiation Period until the date that the Superfund Division Director issues a final decision regarding such dispute; and (3) with respect to commencement or completion of the Plans as described in Paragraph 70 b. above, if the failure to commence or complete the Work under the Plans is due to any action or inaction by EPA that delays such commencement or completion.

75. Following the EPA's determination that Settling Respondents have failed to comply with a requirement of this Settlement Agreement, the EPA shall give Settling Respondents written notification of the same and describe the noncompliance. The EPA may send Settling Respondents a written demand for the payment of the penalties. However, penalties shall accrue as provided in the preceding Paragraph only in the event that EPA has provided Settling Respondents written notification of noncompliance.

76. All penalties accruing under this Section shall be due and payable to the EPA within 30 days of Settling Respondents' receipt from the EPA of a demand for payment of the penalties, unless Settling Respondents invoke the dispute resolution procedures in accordance with Section XV (Dispute Resolution). All payments to the EPA under this Section shall be paid by Electronic Funds Transfer ("EFT") in accordance with the instructions in Paragraph 85. A statement accompanying the EFT payment shall indicate that the payment is for stipulated penalties, and shall reference the EPA Region and Site/Spill ID Number A6X7, the EPA Docket Number _____, and the name and address of the party(ies) making payment. Settling Respondents shall send notice that payment has been made to the EPA as provided in Paragraph 36, and to Ms. Cynthia Brown, U.S. EPA Region 6, 6SF-TE, 1445 Ross Avenue, Dallas, TX 75202.

77. The payment of penalties shall not alter in any way Settling Respondents' obligation to complete performance of the Work.

78. Penalties shall continue to accrue as provided in Paragraphs 74 and 75 during any dispute resolution period, but need not be paid until thirty (30) days after the dispute is resolved by agreement or by receipt of the EPA's decision.

79. If Settling Respondents fail to pay stipulated penalties when due, the EPA may institute proceedings to collect the penalties, as well as Interest. Settling Respondents shall pay Interest on the unpaid balance, which shall begin to accrue on the date of demand made pursuant to Paragraph 75.

80. Nothing in this Settlement Agreement shall be construed as prohibiting, altering, or in any way limiting the ability of the EPA to seek any other remedies or sanctions available by virtue of Settling Respondents' violation of this Settlement Agreement or of the statutes and regulations upon which it is based, including, but not limited to, penalties pursuant to Section 122(l) of CERCLA, 42 U.S.C. § 9622(l), and punitive damages pursuant to Section 107(c)(3) of CERCLA, 42 U.S.C. § 9607(c)(3). Provided, however, that the EPA shall not seek civil penalties pursuant to Section 122(l) of CERCLA or punitive damages pursuant to Section 107(c)(3) of CERCLA for any violation for which a stipulated penalty is provided herein, except in the case of willful violation of this Settlement Agreement or in the event that the EPA assumes performance of a portion or all of the Work pursuant to Section XX (Reservation of Rights by the EPA), Paragraph 91. Notwithstanding any other provision of this Section, the EPA may, in its unreviewable discretion, waive any portion of stipulated penalties that have accrued pursuant to this Settlement Agreement.

## XVII. FORCE MAJEURE

81. Settling Respondents agree to perform all requirements of this Settlement Agreement within the time limits established under this Settlement Agreement, unless the performance is delayed by a *force majeure*. For purposes of this Settlement Agreement, *force majeure* is defined as any event arising from causes beyond the control of Settling Respondents or of any entity controlled by Settling Respondents, including but not limited to their contractors and subcontractors, which delays or prevents performance of any obligation under this Settlement Agreement despite Settling Respondents' best efforts to fulfill the obligation. *Force majeure* does not include financial inability to complete the Work or increased cost of performance.

82. If any event occurs or has occurred that may delay the performance of any obligation under this Settlement Agreement, whether or not caused by a *force majeure* event, Settling Respondents shall notify the EPA orally within 48 hours of when Settling Respondents first knew that the event might cause a delay. Within 14 days thereafter, Settling Respondents shall provide to the EPA in writing an explanation and description of the reasons for the delay; the anticipated duration of the delay; all actions taken or to be taken to prevent or minimize the delay; a schedule for implementation of any measures to be taken to prevent or mitigate the delay or the effect of the delay; Settling Respondents' rationale for attributing such delay to a *force majeure* event if they intend to assert such a claim; and a statement as to whether, in the opinion of Settling Respondents, such event may cause or contribute to an endangerment to public health, welfare or the environment. Failure to comply with the above requirements shall preclude Settling Respondents from asserting any claim of *force majeure* for that event for the period of time of such failure to comply and for any additional delay caused by such failure.

83. If the EPA agrees that the delay or anticipated delay is attributable to *a force majeure* event, the time for performance of the obligations under this Settlement Agreement that are affected by the *force majeure* event will be extended by the EPA for such time as is necessary to complete those obligations, and no stipulated penalties will be assessed for the delay to the extent performance of those obligations is affected by the force majeure event. An extension of the time for performance of the obligations affected by the *force majeure* event shall not, of itself, extend the time for performance of any other obligation. If the EPA does not agree

that the delay or anticipated delay has been or will be caused by a *force majeure* event, the EPA will notify Settling Respondents in writing of its decision. If the EPA agrees that the delay is attributable to a *force majeure* event, the EPA will notify Settling Respondents in writing of the length of the extension, if any, for performance of the obligations affected by the *force majeure* event.

## XVIII. PAYMENT OF FUTURE RESPONSE COSTS

84. Payment for Past Response Costs. Payment for past response costs are not sought in this Settlement Agreement. The EPA hereby reserves its right to seek past response costs in any subsequent administrative and/or judicial settlement agreement or action.

85. Payments of Future Response Costs.

a. Settling Respondents shall pay the EPA all Future Response Costs for the 400 North Richey Area of Investigation not inconsistent with the NCP. At least on a semi-annual basis, but not sooner than every six months, the EPA will send Settling Respondents a bill for the Future Response Costs for the 400 North Richey Area of Investigation requiring payment that includes a Standard Cost Accounting Report (SCORPIOS report) that shows the Future Response Costs for the 400 North Richey Area of Investigation, including direct and indirect costs incurred by the EPA and its contractors for the Unit. Settling Respondents shall make all payments within sixty (60) days of receipt of each bill requiring payment, except as otherwise provided in Paragraph 87 of this Settlement Agreement. Settling Respondents shall make all payments required by this Paragraph to the EPA by Fedwire Electronic Funds Transfer ("EFT") to:

Federal Reserve Bank of New York
ABA = 021030004
Account = 68010727
SWIFT address = FRNYUS33
33 Liberty Street
New York, New York 10045

Field Tag 4200 of the Fedwire message should read "D 68010727 Environmental Protection Agency" and be accompanied by appropriate transmittal communication identifying the name and address of the party(ies) making payment and EPA Site/Spill ID number A6X7 and the EPA docket number for this action.

b. At the time of payment, Settling Respondents shall send notice that payment has been made to:

Chief, Enforcement Assessment Section (6SF-TE)
US EPA, Region 6
1445 Ross Avenue, Suite 1200
Dallas, Texas 75202-2733

And to the EPA Cincinnati Finance Office by e-mail at CINWD_AcctsReceivable@epa.gov, or by mail to:

EPA Cincinnati Finance Office
26 West Martin Luther King Drive
Cincinnati, Ohio 45268

c. The total amount to be paid by Settling Respondents pursuant to Subparagraph 85.a. shall be deposited by EPA in the 400 North Richey Area of Investigation Special Account within the EPA Hazardous Substances Superfund to be retained and used by EPA to conduct or finance response actions at or in connection with AOI-1, or transferred by the EPA to the EPA Hazardous Substances Superfund.

86. Except as set forth in Paragraph 87, if Settling Respondents do not pay Future Response Costs within sixty (60) days of Settling Respondents' receipt of a bill, Settling Respondents shall pay Interest on the unpaid balance of Future Response Costs The Interest on unpaid Future Response Costs shall begin to accrue on the date of the bill and shall continue to accrue until the date of payment. If the EPA receives a partial payment, Interest shall accrue on any unpaid balance. Payments of Interest made under this Paragraph shall be in addition to such other remedies or sanctions available to the United States by virtue of Settling Respondents' failure to make timely payments under this Section, including but not limited to payments of stipulated penalties pursuant to Section XVI. Settling Respondents shall make all payments required by this Paragraph in the manner described in Paragraph 85.

87. Settling Respondents may contest payment of any Future Response Costs billed under Paragraph 85 if they determine that the EPA has made a mathematical error, or included a cost item that is not within the definition of Future Response Costs or if they believe the EPA incurred excess costs as a direct result of an EPA action that was inconsistent with a provision or provisions of the NCP. Such objection shall be made in writing within forty-five (45) days of receipt of the bill and must be sent to the EPA Project Coordinator. Any such objection shall specifically identify the contested Future Response Costs and the basis for objection. In the event of an objection, Settling Respondents shall within sixty (60) days of Settling Respondents' receipt of the bill from EPA (1) pay all uncontested Future Response Costs to the EPA in the manner described in Paragraph 85 and (2) establish an interest-bearing escrow account in a federally-insured bank duly chartered in the State of Texas and remit to that escrow account funds equivalent to the amount of the contested Future Response Costs. Settling Respondents shall send to the EPA Project Coordinator a copy of the statement and documentation evidencing payment of the uncontested Future Response Costs, and a copy of the correspondence that establishes and funds the escrow account, including, but not limited to, information containing the identity of the bank and bank account under which the escrow account is established as well as a bank statement showing the initial balance of the escrow account. The Settling Respondents' written objection to payment made within forty-five (45) days of receipt of EPA's bill shall initiate the Dispute Resolution procedures in Section XV (Dispute Resolution). If the EPA prevails in the dispute, within fourteen (14) days of the resolution of the dispute, Settling Respondents shall pay the sums due (with accrued interest from the escrow account) to the EPA in the manner described in Paragraph 85. If Settling Respondents prevail concerning any aspect of the contested costs, Settling Respondents shall pay that portion of the costs (plus associated

accrued interest from the escrow account) for which they did not prevail to the EPA in the manner described in Paragraph 85. Settling Respondents shall be disbursed any balance of the escrow account. The dispute resolution procedures set forth in this Paragraph in conjunction with the procedures set forth in Section XV (Dispute Resolution) shall be the exclusive mechanisms for resolving disputes regarding Settling Respondents' obligation to reimburse the EPA for its Future Response Costs.

## XIX. COVENANT NOT TO SUE OR TAKE ADMINISTRATIVE ACTION BY EPA

88. In consideration of the actions that will be performed and the payments that will be made by Settling Respondents under the terms of this Settlement Agreement, and except as otherwise specifically provided in this Settlement Agreement, the EPA covenants not to sue or to take administrative action against Settling Respondents pursuant to Sections 106 and 107(a) of CERCLA, 42 U.S.C. §§ 9606 and 9607(a), for the Work and for recovery of Future Response Costs. This covenant not to sue shall take effect upon the Effective Date and is conditioned upon the complete and satisfactory performance by Settling Respondents of all obligations under this Settlement Agreement, including, but not limited to, payment of Future Response Costs pursuant to Section XVIII. This covenant not to sue extends only to Settling Respondents and their successors and assigns and does not extend to any other person.

## XX. RESERVATIONS OF RIGHTS BY EPA

89. Except as specifically provided in this Settlement Agreement, nothing herein shall limit the power and authority of the EPA or the United States to take, direct, or order all actions necessary to protect public health, welfare, or the environment or to prevent, abate, or minimize an actual or threatened release of hazardous substances, pollutants or contaminants, or hazardous or solid waste on, at, or from the Site. Further, nothing herein shall prevent the EPA from seeking legal or equitable relief to enforce the terms of this Settlement Agreement, from taking other legal or equitable action as it deems appropriate and necessary, or from requiring Settling Respondents in the future to perform additional activities pursuant to CERCLA or any other applicable law.

90. The covenant not to sue set forth in Section XIX above does not pertain to any matters other than those expressly identified therein. The EPA reserves, and this Settlement Agreement is without prejudice to, all rights against Settling Respondents with respect to all other matters, including, but not limited to:

a. claims based on a failure by Settling Respondents to meet a requirement of this Settlement Agreement;

b. liability for costs not included within the definition of Future Response Costs;

c. liability for performance of response action other than the Work;

d. criminal liability;

e. liability for damages for injury to, destruction of, or loss of natural resources, and for the costs of any natural resource damage assessments;

f. liability arising from the past, present, or future disposal, release or threat of release of Waste Materials outside of the Site; and

g. liability for costs incurred or to be incurred by the Agency for Toxic Substances and Disease Registry related to the Site, except to the extent reimbursed under this Settlement Agreement.

91. Work Takeover. In the event the EPA determines that Settling Respondents have ceased implementation of any portion of the Work, are seriously or repeatedly deficient or late in their performance of the Work, or are implementing the Work in a manner which may cause an endangerment to human health or the environment, the EPA may assume the performance of all or any portion of the Work as the EPA determines necessary. Settling Respondents may invoke the procedures set forth in Section XV (Dispute Resolution) to dispute the EPA's determination that takeover of the Work is warranted under this Paragraph. Costs incurred by the EPA in performing the Work pursuant to this Paragraph shall be considered Future Response Costs that Settling Respondents shall pay pursuant to Section XVIII (Payment of Future Response Costs). Notwithstanding any other provision of this Settlement Agreement, the EPA retains all authority and reserves all rights to take any and all response actions authorized by law.

In the event EPA assumes the performance of all or any portion of the Work, EPA shall notify Settling Respondents in writing. Such takeover notification shall identify that all or a specifically designated portion of the Work shall be assumed by EPA. Stipulated penalties for violations of the Settlement Agreement directly relating to the Work assumed by EPA shall continue to accrue only until the earlier of (1) the date upon which EPA, or another party pursuant to an agreement with or ordered by EPA, commences performance of that Work or (2) if the EPA Work Takeover is not delayed by actions of the Settling Respondents, including but not limited to invocation of dispute resolution pursuant to Section XV to prevent takeover, 30 days from the Settling Respondents' receipt of the takeover notice.

## XXI. COVENANT NOT TO SUE BY SETTLING RESPONDENTS

92. Except as provided in Paragraphs 93 through 97 Settling Respondents covenant not to sue and agree not to assert any claims or causes of action against the United States, or its contractors or employees, with respect to the Work, Future Response Costs, or this Settlement Agreement, including, but not limited to:

a. any direct or indirect claim for reimbursement from the Hazardous Substance Superfund established by 26 U.S.C. § 9507, based on Sections 106(b)(2), 107, 111, 112, or 113 of CERCLA, 42 U.S.C. §§ 9606(b)(2), 9607, 9611, 9612, or 9613, or any other provision of law;

b. any claim arising out of the Work or arising out of the response actions for which the Future Response Costs have or will be incurred, including any claim under the United States Constitution, the Texas Constitution, the Tucker Act, 28 U.S.C. § 1491, the Equal Access to Justice Act, 28 U.S.C. § 2412, as amended, or at common law; or

c. any claim against the United States pursuant to Sections 107 and 113 of CERCLA, 42 U.S.C. §§ 9607 and 9613, relating to the Work or payment of Future Response Costs.

93. These covenants not to sue shall not apply in the event the United States brings a cause of action or issues an order pursuant to the reservations set forth in Paragraphs 90 (b)-(c), and (e) - (g), but only to the extent that Settling Respondents' claims arise from the same response action, response costs, or damages that the United States is seeking pursuant to the applicable reservation.

94. Nothing in this Settlement Agreement shall be deemed to constitute approval or preauthorization of a claim within the meaning of Section 111 of CERCLA, 42 U.S.C. § 9611, or 40 C.F.R. § 300.700(d).

## XXII. RESERVATION OF RIGHTS BY SETTLING RESPONDENTS

95. The covenants not to sue set forth in Section XXI above do not pertain to any matters other than those expressly identified therein. Settling Respondents expressly reserve, jointly and severally, and this Settlement Agreement is without prejudice to, all rights, claims and causes of action with respect to all other matters including, but not limited to:

a. claims brought by Settling Respondents pursuant to an agreement(s) among Settling Respondents and relating to the allocation and payment of costs of all "matters addressed" in the Settlement Agreement as that term is defined in Paragraph 101, or required to satisfy other obligations hereunder.

b. claims against the United States, subject to the provisions of Chapter 171 of Title 28 of the United States Code, and brought pursuant to any statute and for which the waiver of sovereign immunity is found in a statute for money damages for injury or loss of property or personal injury or death caused by the negligent or wrongful act or omission of any employee of the United States, as that term is defined in 28 U.S.C. § 2671, while acting within the scope of his or her office or employment under circumstances where the United States, if a private person, would be liable to the claimant in accordance with the law of the place where the act or omission occurred. However, the foregoing shall not include any claim based on EPA's selection of response actions, or the oversight or approval of Respondents' plans, reports, other deliverables or activities.

96. Subject to the United States' sovereign immunity and any other defenses it may have, this Settlement Agreement shall not have any effect on and Settling Respondents expressly reserve any claims or causes of action that Respondents may have pursuant to Section 113 of CERCLA or other state or federal claims against the United States or any of its agencies or departments based upon its (or their) status as a liable or potentially liable party pursuant to Section 107(a) of CERCLA, 42 U.S.C. 9607(a) relating to the Work, Future Response Costs, or this Settlement Agreement. This paragraph shall not be construed as a waiver of sovereign immunity nor shall it be construed as an acknowledgment or concession by the United States that Settling Respondents have any claim under state or federal law other than a claim under Section 113 of CERCLA.

97. Notwithstanding anything in this Settlement Agreement to the contrary, including the contribution protection provided in Paragraph 101, each Settling Respondent expressly reserves any right it may have to seek recovery pursuant to Section 113 of CERCLA, 42 U.S.C. § 9613, or any other provision of federal or state law including the Texas Solid Waste Disposal Act, from any person not a party to this Settlement Agreement. This paragraph shall not be construed as a waiver of sovereign immunity nor shall it be construed as an acknowledgment or concession by the United States that Settling Respondents have any claim under state or federal law other than a claim under Section 113 of CERCLA.

## XXIII. OTHER CLAIMS

98. By issuance of this Settlement Agreement, the United States and the EPA assume no liability for injuries or damages to persons or property resulting from any acts or omissions of Settling Respondents.

99. Except as expressly provided in Section XIX (Covenant Not to Sue by EPA), nothing in this Settlement Agreement constitutes a satisfaction of or release from any claim or cause of action against Settling Respondents or any person not a party to this Settlement Agreement, for any liability such person may have under CERCLA, other statutes, or common law, including but not limited to any claims of the United States for costs, damages and interest under Sections 106 and 107 of CERCLA, 42 U.S.C. §§ 9606 and 9607.

100. No action or decision by the EPA pursuant to this Settlement Agreement shall give rise to any right to judicial review except as set forth in Section 113(h) of CERCLA, 42 U.S.C. § 9613(h).

## XXIV. CONTRIBUTION PROTECTION

101. a. The Parties agree that this Settlement Agreement constitutes an administrative settlement pursuant to which each Respondent has, as of the Effective Date, resolved its liability to the United States within the meaning of Sections 113(f)(2) and 122(h)(4) of CERCLA, 42 U.S.C. §§ 9613(f)(2) and 9622(h)(4), and that subject to Settling Respondents' Reservation of Rights in Paragraphs 95 through 96, is entitled, as of the Effective Date, to protection from contribution actions or claims as provided by Sections 113(f)(2) and 122(h)(4) of CERCLA, 42 U.S.C. §§ 9613(f)(2) and 9622(h)(4), or as may be otherwise provided by law, for the "matters addressed" in this Settlement Agreement. The "matters addressed" in this Settlement Agreement are the Work, and Future Response Costs.

b. The Parties further agree that this Settlement Agreement constitutes an administrative settlement pursuant to which each Settling Respondent has as of the Effective Date, resolved its liability to the United States within the meaning of Section 113(f)(3)(B) of CERCLA, 42 U.S.C. § 9613(f)(3)(B)..

c. The contribution protection provided by this Section XXIV (Contribution Protection) does not preclude (1) the EPA from enforcing the terms of this Settlement Agreement, subject to Paragraph 88, against any Settling Respondent that does not perform the obligations under this Settlement Agreement; (2) an action by any of the Settling Respondents under breach of contract or any other common law remedy, against any Settling Respondent

that does not perform the obligations under this Settlement Agreement and pay its share of the costs of such obligations in accordance with the agreement(s) among the Settling Respondents and (3) an action by any of the Settling Respondents to pursue any right Settling Respondents may have under Section 113 of CERCLA, 42 U.S.C. § 9613, or any other provision of federal or state law including the Texas Solid Waste Disposal Act, against any person not a party to this Settlement Agreement. This paragraph shall not be construed as a waiver of sovereign immunity nor shall it be construed as an acknowledgment or concession by the United States that Settling Respondents have any claim under state or federal law other than a claim under Section 113 of CERCLA.

## XXV. INDEMNIFICATION

102. Settling Respondents shall indemnify, save and hold harmless the United States, its officials, agents, contractors, subcontractors, employees and representatives from any and all claims or causes of action arising from, or on account of negligent or other wrongful acts or omissions of Settling Respondents, their officers, directors, employees, agents, contractors, or subcontractors, in carrying out actions pursuant to this Settlement Agreement. In addition, Settling Respondents agree to pay the United States all costs incurred by the United States, including but not limited to attorney fees and other expenses of litigation and settlement, arising from or on account of claims made against the United States based on negligent or other wrongful acts or omissions of Settling Respondents, their officers, directors, employees, agents, contractors, subcontractors and any persons acting on their behalf or under their control, in carrying out activities pursuant to this Settlement Agreement. The United States shall not be held out as a party to any contract entered into by or on behalf of Settling Respondents in carrying out activities pursuant to this Settlement Agreement. Neither Settling Respondents nor any such contractor shall be considered an agent of the United States.

103. The United States shall give Settling Respondents notice of any claim for which the United States plans to seek indemnification pursuant to this Section and shall consult with Settling Respondents prior to settling such claim.

104. Settling Respondents waive all claims against the United States for damages or reimbursement or for set-off of any payments made or to be made to the United States, arising from or on account of any contract, agreement, or arrangement between any one or more of Settling Respondents and any person for performance of Work on or relating to the Site. In addition, Settling Respondents shall indemnify and hold harmless the United States with respect to any and all claims for damages or reimbursement arising from or on account of any contract, agreement, or arrangement between any one or more of Settling Respondents and any person for performance of Work on or relating to the Site.

## XXVI. INSURANCE

105. At least seven (7) days prior to commencing any on-site Work, Settling Respondents or their contractors or primary subcontractors that are actually conducting the on-site Work shall secure, and shall maintain for the duration of their on-site Work, comprehensive general liability insurance of $1,000,000 per occurrence ($2,000,000 aggregate) and automobile insurance with limits of $1,000,000, combined single limit, naming the EPA as an additional

insured. Within the same period, Settling Respondents shall provide the EPA with certificates of such insurance. Upon EPA's request, Settling Respondents shall submit such certificates of insurance for each such contractor or primary subcontractor each year on the anniversary of the Effective Date if the same contractor or primary subcontractor is still conducting on-site Work. In addition, for the duration of the on-site Work, Settling Respondents shall ensure that their contractors or primary subcontractors who are actually the on-site Work satisfy all applicable laws and regulations regarding the provision of worker's compensation insurance for all persons performing the on-site Work on behalf of Settling Respondents in furtherance of this Settlement Agreement. If Settling Respondents demonstrate by evidence satisfactory to the EPA that any contractor or primary subcontractor maintains insurance equivalent to that described above, or insurance covering some or all of the same risks but in an equal or lesser amount, then Settling Respondents need provide only that portion of the insurance described above which is not maintained by such contractor or primary subcontractor.

## XXVII. FINANCIAL ASSURANCE

106. At least fifteen (15) days prior to commencing any on-site Work, Settling Respondents, collectively and not individually, shall demonstrate that one or more of the Settling Respondents possess sufficient assets to complete the Work at the Site based upon Settling Respondents' estimated costs to complete the RI/FS. Settling Respondents may reduce the amount of financial assurance demonstrated to complete the Work as the Work is performed and approved by EPA. Settling Respondents may make the demonstration in one or more of the following forms:

a. a surety bond unconditionally guaranteeing payment and/or performance to complete the Work;

b. one or more irrevocable letters of credit, payable to or at the direction of EPA, issued by financial institution(s) acceptable in all respects to the EPA equaling the estimated cost to complete the RI/FS;

c. a trust fund administered by a trustee acceptable in all respects to the EPA;

d. a policy of insurance issued by an insurance carrier acceptable in all respects to EPA, which ensures the payment and/or performance to complete the RI/FS;

e. a corporate guarantee to complete the Work provided by one or more parent corporations or subsidiaries of Settling Respondents, or by one or more unrelated corporations that have a substantial business relationship with at least one of the Settling Respondents; including a demonstration that any such company satisfies the financial test requirements of 40 C.F.R. Part 264.143(f);

f. a corporate guarantee to complete the Work by one or more of Settling Respondents, including a demonstration that any such Settling Respondent satisfies the requirements of 40 C.F.R. Part 264.143(f); or

g. a demonstration based upon publically available financial information (such as a form 10k) that one or more of the Settling Respondents have sufficient assets to complete the RI/FS based upon Settling Respondents' estimated costs to complete the RI/FS.

107. Any and all financial assurance instruments provided pursuant to this Section shall be in form and substance satisfactory to the EPA, determined in the EPA's sole discretion. In the event that the EPA determines at any time that the financial assurances provided pursuant to this Section (including, without limitation, the instrument(s) evidencing such assurances) are inadequate, Settling Respondents shall, within 30 days of receipt of notice of the EPA's determination, obtain and present to the EPA for approval one of the other forms of financial assurance listed in Paragraph 106, above. In addition, if at any time the EPA notifies Settling Respondents that the anticipated cost of completing the Work has increased beyond the Settling Respondents' estimated costs, then, within 30 days of such notification, Settling Respondents shall obtain and present to the EPA for approval a revised form of financial assurance (otherwise acceptable under this Section) that reflects such cost increase. Settling Respondents' inability to demonstrate financial ability to complete the Work shall in no way excuse performance of any activities required under this Settlement Agreement.

108. If Settling Respondents seek to ensure completion of the Work through a guarantee pursuant to Subparagraph 106.e. or 106.f. of this Settlement Agreement, Settling Respondents shall (i) demonstrate to EPA's satisfaction that the guarantor satisfies the requirements of 40 C.F.R. Part 264.143(f); and (ii) resubmit sworn statements conveying the information required by 40 C.F.R. Part 264.143(f) annually, on the anniversary of the Effective Date, to the EPA. For the purposes of this Settlement Agreement, wherever 40 C.F.R. Part 264.143(f) references "sum of current closure and post-closure costs estimates and the current plugging and abandonment costs estimates," Settling Respondents' estimated costs to complete the RI/FS at the Site shall be used in relevant financial test calculations.

109. If, after the Effective Date, Settling Respondents can show that the estimated cost to complete the RI/FS has diminished, Settling Respondents may, on any anniversary date of the Effective Date, or at any other time agreed to by the Parties, reduce the amount of the financial security provided under this Section to the estimated cost to complete the RI/FS. Settling Respondents shall submit a proposal for such reduction to the EPA, in accordance with the requirements of this Section, and may reduce the amount of the security after receiving written approval from the EPA. In the event of a dispute, Settling Respondents may seek dispute resolution pursuant to Section XV (Dispute Resolution). Settling Respondents may reduce the amount of security in accordance with the EPA's written decision resolving the dispute.

110. Settling Respondents may change the form of financial assurance provided under this Section at any time, upon notice to and prior written approval by the EPA, provided that the EPA determines that the new form of assurance meets the requirements of this Section. In the event of a dispute, Settling Respondents may change the form of the financial assurance only in accordance with the written decision resolving the dispute, based on Settling Respondents' estimated cost to complete the RI/FS.

Settling Respondents' obligation to demonstrate financial assurance under this Settlement Agreement shall terminate upon the Record of Decision for the Site.

## XXVIII. INTEGRATION/APPENDICES

111. This Settlement Agreement and its appendices and any deliverables, technical memoranda, specifications, schedules, documents, plans, reports (other than progress reports), etc. that will be developed pursuant to this Settlement Agreement and become incorporated into and enforceable under this Settlement Agreement constitute the final, complete and exclusive agreement and understanding among the Parties with respect to the settlement embodied in this Settlement Agreement. The parties acknowledge that there are no representations, agreements or understandings relating to the settlement other than those expressly contained in this Settlement Agreement. The following appendices are attached to and incorporated into this Settlement Agreement:

"Appendix A" is the list of Settling Respondents (subject to change pursuant to Paragraph I.4.).

"Appendix B is the SOW of the Site and all associated appendices**.**

"Appendix C" is the map of the Site.

"Appendix" D is a copy of the order appointing the Receiver.

## XXIX. ADMINISTRATIVE RECORD

112. The EPA will determine the contents of the administrative record file for selection of the remedial action. Settling Respondents shall submit to the EPA documents developed during the course of the RI/FS upon which selection of the response action may be based. Upon request of the EPA, Settling Respondents shall provide copies of plans, task memoranda for further action, quality assurance memoranda and audits, raw data, field notes, laboratory analytical reports and other reports. Upon request of the EPA, Settling Respondents shall additionally submit any previous studies conducted under state, local or other federal authorities relating to selection of the response action, and all communications between Settling Respondents and state, local or other federal authorities concerning selection of the response action. At the EPA's discretion, Settling Respondents shall establish a community information repository at or near the Site, to house one copy of the administrative record.

## XXX. NOTICE OF SETTLEMENT AGREEMENT

113. This Agreement will be published as notice on EPA's website within 60 days of its Effective Date.

## XXXI. EFFECTIVE DATE AND SUBSEQUENT MODIFICATION

114. This Settlement Agreement shall be effective on the day it is signed by the Superfund Division Director which is to occur immediately after the EPA issues written notice that the public comment period pursuant to Paragraph 113 has closed and that comments received, if any, do not require modification of or EPA withdrawal from this Agreement..

115. This Settlement Agreement may be amended by mutual agreement of EPA and Respondents. Amendments shall be in writing and shall be effective when signed by EPA. EPA Project Coordinators do not have the authority to sign amendments to the Settlement Agreement.

116. No informal advice, guidance, suggestion, or comment by the EPA Project Coordinator or other EPA representatives regarding reports, plans, specifications, schedules, or any other writing submitted by Respondents shall relieve Respondents of their obligation to obtain any formal approval required by this Settlement Agreement, or to comply with all requirements of this Settlement Agreement, unless it is formally modified.

## XXXII. NOTICE OF COMPLETION OF WORK

117. When the EPA determines that all Work has been fully performed in accordance with this Settlement Agreement, with the exception of any continuing obligations required by this Settlement Agreement, including but not limited to payment of Future Response Costs or record retention, the EPA will provide written notice to Settling Respondents. If the EPA determines that any such Work has not been completed in accordance with this Settlement Agreement, the EPA will notify Settling Respondents, provide a list of the deficiencies, and require that Settling Respondents modify the RI/FS Work Plan if appropriate in order to correct such deficiencies, in accordance with Paragraph 41 (Modification of the Work Plan). Failure by Settling Respondents to implement the approved modified RI/FS Work Plan shall be a violation of this Settlement Agreement.

Administrative Order on Consent for Remedial Investigation and Feasibility Study

U.S. Oil Recovery Superfund Site – 400 N. Richey Street Area of Investigation

Receiver Signature Page

Agreed this 20th day of April, 2015.

For Receiver Eva Engelhart

By: Eva Engelhart

Title: Receiver for U.S. Oil Recovery, L.P. f/k/a U.S. Oil Recovery LLC, MCC Recycling LLP f/k/a US Oil Recovery #2, LLP, U.S. Oil Recovery L.L.P. (Texas Secretary of State Registration No. 800159885), U.S. Oil Recovery L.L.P. (Texas Secretary of State Registration No. 800458414)

Administrative Order on Consent for Remedial Investigation and Feasibility Study

U.S. Oil Recovery Superfund Site – 400 N. Richey Street Area of Investigation

Settling Respondent Signature Page

Agreed this _____ day of _____, 2015.

For Settling Respondent _____

By:_____

Title: _____

Administrative Order on Consent for Remedial Investigation and Feasibility Study

U.S. Oil Recovery Superfund Site – 400 N. Richey Street Area of Investigation

Environmental Protection Agency Signature Page

It is so ORDERED AND AGREED this _____ day of _____, 2015.

BY: _____ DATE: 05/14/2015

Director, Superfund Division
Region 6
U.S. Environmental Protection Agency

Administrative Order on Consent for Remedial Investigation and Feasibility Study

U.S. Oil Recovery Superfund Site – 400 N. Richey Street Area of Investigation

Settling Respondent Signature Page

Agreed this 6th day of March, 2015.

For Settling Respondents Air Products and Chemicals, Inc.
Air Products LLC, as successor in interest to Air Products, L.P.

By: _____
Todd Solodar

Title: Senior EH&S Counsel

Administrative Order on Consent for Remedial Investigation and Feasibility Study

U.S. Oil Recovery Superfund Site – 400 N. Richey Street Area of Investigation

Setting Respondent Signature Page

Agreed this 3rd day of March, 2015.

For Settling Respondent: Akzo Nobel Functional Chemicals LLC
(as successor to Akzo Nobel Polymer Chemicals LLC)

By: Charles R Sudler

Title: VICE PRESIDENT & SECRETARY

By: _____

Title: VP Tax

Administrative Order on Consent for Remedial Investigation and Feasibility Study

U.S. Oil Recovery Superfund Site – 400 N. Richey Street Area of Investigation

Settling Respondent Signature Page

Agreed this 30th day of March, 2015.

For Settling Respondent Allied Petrochemical

By: _____

Title: President

Administrative Order on Consent for Remedial Investigation and Feasibility Study

U.S. Oil Recovery Superfund Site – 400 N. Richey Street Area of Investigation

Settling Respondent Signature Page

Agreed this 10th day of February, 2015.

For Settling Respondent American Acryl L.P.

By: Douglas S. Smith

Title: General Manager

Administrative Order on Consent for Remedial Investigation and Feasibility Study

U.S. Oil Recovery Superfund Site – 400 N. Richey Street Area of Investigation

Settling Respondent Signature Page

Agreed this 10TH day of FEBRUARY, 2015.

For Settling Respondent AMERICAN SPRING WIRE CORPORATION

By: _____

Title: CHIEF OPERATING OFFICER

Administrative Order on Consent for Remedial Investigation and Feasibility Study

U.S. Oil Recovery Superfund Site – 400 N. Richey Street Area of Investigation

Settling Respondent Signature Page

Agreed this 5th day of March, 2015.

For Settling Respondent American Valve & Hydrant Mfg Co.

By: Jimmy Evans, CM

Title: Plant Environmental and Safety Coordinator

Administrative Order on Consent for Remedial Investigation and Feasibility Study

U.S. Oil Recovery Superfund Site – 400 N. Richey Street Area of Investigation

Settling Respondent Signature Page

Agreed this 27 day of March, 2015.

For Settling Respondent Andrews Transport LP

By: Bill Andrews

Title: Chairman & CEO

Administrative Order on Consent for Remedial Investigation and Feasibility Study

U.S. Oil Recovery Superfund Site – 400 N. Richey Street Area of Investigation

Settling Respondent Signature Page

Agreed this 16th day of April, 2015.

For Settling Respondent ASHLAND INC. For itself and as indemnitor of Continental Airlines, General Dynamics, Aerojet, Cyprus Cork, Schumberger Clear water International, LLC.

By: RJW

Title: Chief Counsel, Environmental Litigation

Administrative Order on Consent for Remedial Investigation and Feasibility Study

U.S. Oil Recovery Superfund Site – 400 N. Richey Street Area of Investigation

Settling Respondent Signature Page

Agreed this 26th day of March, 2015.

For Settling Respondent BAKER HUGHES OILFIELD OPERATIONS, INC. AND BAKER PETROLITE CORPORATION

By: [signature]

Title: DIRECTOR OF ENVIRONMENTAL AFFAIRS.

Administrative Order on Consent for Remedial Investigation and Feasibility Study

U.S. Oil Recovery Superfund Site – 400 N. Richey Street Area of Investigation

Settling Respondent Signature Page

Agreed this 18 day of February, 2015

For Settling Respondent: **BASF Corporation**

By: _____

Steven J. Goldberg,

Title: Vice President & Associate General Counsel, Regulatory & Government Affairs

Administrative Order on Consent for Remedial Investigation and Feasibility Study

U.S. Oil Recovery Superfund Site – 400 N. Richey Street Area of Investigation

Settling Respondent Signature Page

Agreed this 29th day of April, 2015.

For Settling Respondent: Bayer CropScience Inc.

By: 

Name: William Ferguson

Title: Assistant Secretary

Administrative Order on Consent for Remedial Investigation and Feasibility Study

U.S. Oil Recovery Superfund Site – 400 N. Richey Street Area of Investigation

Settling Respondent Signature Page

Agreed this 5th day of March, 2015.

For Settling Respondent Blentech Corporation

By: George A. Hahn

Title: President

Administrative Order on Consent for Remedial Investigation and Feasibility Study

U.S. Oil Recovery Superfund Site – 400 N. Richey Street Area of Investigation

Settling Respondent Signature Page

Agreed this 6 day of March, 2015.

For Settling Respondent BNSF Railway Company

By: Russell J. Light

Title: Senior General Attorney

Administrative Order on Consent for Remedial Investigation and Feasibility Study

U.S. Oil Recovery Superfund Site – 400 N. Richey Street Area of Investigation

Settling Respondent Signature Page

Agreed this 6 day of February, 2015.

For Settling Respondent BP Products North America Inc. and BP Amoco Chemical Company, for and on behalf of BP Solvay Polyethelyne

By: Cynthia D Kyzos

Title: Strategy Manager

Administrative Order on Consent for Remedial Investigation and Feasibility Study

U.S. Oil Recovery Superfund Site – 400 N. Richey Street Area of Investigation

Settling Respondent Signature Page

Agreed this 13th day of MARCH, 2015.

For Settling Respondent CENTERPOINT ENERGY HOUSTON ELECTRIC LLC

By: Richard D Bye

Title: DIRECTOR, ENVIRONMENTAL SERVICES

Administrative Order on Consent for Remedial Investigation and Feasibility Study

U.S. Oil Recovery Superfund Site – 400 N. Richey Street Area of Investigation

Settling Respondent Signature Page

Agreed this 18 day of March, 2015.

For Settling Respondent Channel Shipyard

By: Alan Bonds

Title: V.P.

Administrative Order on Consent for Remedial Investigation and Feasibility Study

U.S. Oil Recovery Superfund Site – 400 N. Richey Street Area of Investigation

Settling Respondent Signature Page

Agreed this 3rd day of March, 2015.

For Settling Respondent Clean Harbors San Leon, Inc.

By: Michael R. McDonald

Title: Assistant Secretary

Administrative Order on Consent for Remedial Investigation and Feasibility Study

U.S. Oil Recovery Superfund Site – 400 N. Richey Street Area of Investigation

Settling Respondent Signature Page

Agreed this 10 day of February, 2015.

For Settling Respondent Thiecay Agent, Cray Valley U.S.A., LLC, f.k.a. Sartomer Company, Inc.

By: THIERRY RAZAT

Title: GENERAL MANAGER, TCV DIVISION OF TPRI

Administrative Order on Consent for Remedial Investigation and Feasibility Study

U.S. Oil Recovery Superfund Site – 400 N. Richey Street Area of Investigation

Settling Respondent Signature Page

Agreed this 10 day of April, 2015.

For Settling Respondent Crown Cork & Seal Inc

By: [signature]

Title: Asst Secretary / Asst Sec

Administrative Order on Consent for Remedial Investigation and Feasibility Study

U.S. Oil Recovery Superfund Site – 400 N. Richey Street Area of Investigation

Settling Respondent Signature Page

Agreed this 25 day of February, 2015.

For Settling Respondent DANA CONTAINER

By: X _____

Title: President

Administrative Order on Consent for Remedial Investigation and Feasibility Study

U.S. Oil Recovery Superfund Site – 400 N. Richey Street Area of Investigation

Settling Respondent Signature Page

Agreed this 2 day of March, 2015.

For Settling Respondent DCP Midstream, LP (PRP description below)

By: Jamie K. Buchhorn

Title: Sr. V.P Regulatory, Gov't Affairs & Risk Management

PRP: DCP Midstream LP (on behalf of DCP Southeast Texas Plants LLC f/k/a Raywood Gas Plant LLC, for waste attributed to the Raywood Gas Plant)

Administrative Order on Consent for Remedial Investigation and Feasibility Study

U.S. Oil Recovery Superfund Site – 400 N. Richey Street Area of Investigation

Settling Respondent Signature Page

Agreed this 24th day of March, 2015.

For Settling Respondent Domco Products Texas Inc.

By: _____

Title: President

Administrative Order on Consent for Remedial Investigation and Feasibility Study

U.S. Oil Recovery Superfund Site – 400 N. Richey Street Area of Investigation

Settling Respondent Signature Page

Agreed this 29 day of April, 2015.

For Settling Respondent The Dow Chemical Company*

By Mary J. Draves

Title Global Director Environmental Remediation and Restoration

*The Dow Chemical Company is signing with respect to Calpine Corp.'s Freeport Energy Center located at 2301 N. Brazosport Blvd B-5600 Block, Freeport, TX 77541. The Dow Chemical Company is signing with respect to Johann Haltermann Ltd.'s facilities located at 16717 Jacintoport Boulevard and at 1201 Sheldon Road in Houston, TX.

Administrative Order on Consent for Remedial Investigation and Feasibility Study

U.S. Oil Recovery Superfund Site – 400 N. Richey Street Area of Investigation

Settling Respondent Signature Page

Agreed this 6 day of February, 2015.

For Settling Respondent Ecolab Inc.

By: _____

Title: EVP, Global Supply Chain Officer

Administrative Order on Consent for Remedial Investigation and Feasibility Study

U.S. Oil Recovery Superfund Site – 400 N. Richey Street Area of Investigation

Settling Respondent Signature Page

Agreed this 3rd day of March, 2015.

For Settling Respondent Effective Environmental, Inc.

By: _____

Title: President

Administrative Order on Consent for Remedial Investigation and Feasibility Study

U.S. Oil Recovery Superfund Site – 400 N. Richey Street Area of Investigation

Settling Respondent Signature Page

Agreed this 17 day of March, 2015.

For Settling Respondent Enable Pipeline Services, LLC (formerly Center point Energy Pipeline Services LLC)

By: Mark Schroeder

Title: Executive Vice President & General Counsel

Administrative Order on Consent for Remedial Investigation and Feasibility Study

U.S. Oil Recovery Superfund Site – 400 N. Richey Street Area of Investigation

Settling Respondent Signature Page

Agreed this 6th day of February, 2015.

For Settling Respondent ENSOURCE CORPORATION

By: Jay M. Lee

Title: Vice President

Administrative Order on Consent for Remedial Investigation and Feasibility Study

U.S. Oil Recovery Superfund Site – 400 N. Richey Street Area of Investigation

Settling Respondent Signature Page

Agreed this 20th day of MARCH, 2015.

For Settling Respondent Enterprise Products Operating LLC *

By: _____

Title: GSVP OPERATIONS & EHST

*Enterprise Products Operating, LLC, on behalf of Enterprise Products Operating, LLC, Enterprise Refined Products Company LLC, Enterprise TE Products Pipeline Company, LLC and Enterprise Transportation Company

Administrative Order on Consent for Remedial Investigation and Feasibility Study

U.S. Oil Recovery Superfund Site – 400 N. Richey Street Area of Investigation

Settling Respondent Signature Page

Agreed this 5th day of February, 2015.

For Settling Respondent ETHYL CORPORATION

By: John W. Street

Title: Director HSSE

Administrative Order on Consent for Remedial Investigation and Feasibility Study

U.S. Oil Recovery Superfund Site – 400 N. Richey Street Area of Investigation

Settling Respondent Signature Page

Agreed this 26 day of Feb, 2015.

For Settling Respondent : Evonik Oil Additives USA, Inc.
(formerly known as Evonik RohMax USA, Inc.)

By: _____
Lee Braem

Title: Senior Corporate Counsel

Administrative Order on Consent for Remedial Investigation and Feasibility Study

U.S. Oil Recovery Superfund Site – 400 N. Richey Street Area of Investigation

Settling Respondent Signature Page

Agreed this 6th day of February, 2015.

For Settling Respondent Explorer Pipeline Company

By: Curtis L. Craig

Title: Vice President & General Counsel

Administrative Order on Consent for Remedial Investigation and Feasibility Study

U.S. Oil Recovery Superfund Site – 400 N. Richey Street Area of Investigation

Settling Respondent Signature Page

Agreed this 15 day of March, 2015.

For Time Technologies by:

For Settling Respondent Dianne Ralston

By: Dianne Ralston

Title: General Counsel

FMCTI

Administrative Order on Consent for Remedial Investigation and Feasibility Study

U.S. Oil Recovery Superfund Site – 400 N. Richey Street Area of Investigation

Settling Respondent Signature Page

Agreed this 16th day of March, 2015.

For Settling Respondent Fort Bend Regional Landfill, LP
By: Waste Corporation of Texas, L.P., its sole general partner
By: _____

Title: Michael A. Roy, Vice President

Administrative Order on Consent for Remedial Investigation and Feasibility Study

U.S. Oil Recovery Superfund Site – 400 N. Richey Street Area of Investigation

Settling Respondent Signature Page

Agreed this 26th day of February, 2015.

For Settling Respondent Garner Environmental Services, Inc.

By: _____

Title: President

Administrative Order on Consent for Remedial Investigation and Feasibility Study

U.S. Oil Recovery Superfund Site – 400 N. Richey Street Area of Investigation

Settling Respondent Signature Page

Agreed this 2nd day of MARCH, 2015.

For Settling Respondent GATX CORPORATION

By: _____

Title: Assistant General Counsel

Administrative Order on Consent for Remedial Investigation and Feasibility Study

U.S. Oil Recovery Superfund Site – 400 N. Richey Street Area of Investigation

Settling Respondent Signature Page

Agreed this 2nd day of March, 2015.

For Settling Respondent General Dynamics Ordnance and Tactical Systems, Inc. (indemnified by Ashland)

By: Lee Schmerson

Title: V.P. & Assistant Secretary

Administrative Order on Consent for Remedial Investigation and Feasibility Study

U.S. Oil Recovery Superfund Site – 400 N. Richey Street Area of Investigation

Settling Respondent Signature Page

Agreed this 19th day of February, 2015.

For Settling Respondent General Electric Company

By: Andrew J. Thomas

Title: Executive Counsel, Remediation

Administrative Order on Consent for Remedial Investigation and Feasibility Study

U.S. Oil Recovery Superfund Site – 400 N. Richey Street Area of Investigation

Settling Respondent Signature Page

Agreed this 25TH day of MARCH, 2015.

For Settling Respondent GROENDYKE TRANSPORT, INC.

By: JEFF TRAYNOR

Title: MGR., ENVIRONMENTAL COMPLIANCE

Administrative Order on Consent for Remedial Investigation and Feasibility Study

U.S. Oil Recovery Superfund Site – 400 N. Richey Street Area of Investigation

Settling Respondent Signature Page

Agreed this 24th day of February, 2015.

For Settling Respondent Hexion Inc. (f/k/a Momentive Specialty Chemicals Inc)

By: Kenneth Koch

Title: Executive Vice President - EH&S

Administrative Order on Consent for Remedial Investigation and Feasibility Study

U.S. Oil Recovery Superfund Site – 400 N. Richey Street Area of Investigation

Settling Respondent Signature Page

Agreed this 19th day of FEBRUARY, 2015.

For Settling Respondent HOUSTON PIPE LINE COMPANY LP

By: _____

Title: ENV. VP

Administrative Order on Consent for Remedial Investigation and Feasibility Study

U.S. Oil Recovery Superfund Site – 400 N. Richey Street Area of Investigation

Settling Respondent Signature Page

Agreed this 27 day of April, 2015.

For Settling Respondent Hydrocarbon Resource Recovery, LLC.

By: Scott Rain

Title: Member

Administrative Order on Consent for Remedial Investigation and Feasibility Study

U.S. Oil Recovery Superfund Site – 400 N. Richey Street Area of Investigation

Settling Respondent Signature Page

Agreed this 26 day of FEBRUARY, 2015.

For Settling Respondent Ineos Polyethylene NA & Related Parties

By: _____

Title: VP OF OPERATIONS

Settling Respondent: Ineos Polyethylene NA & Related Parties
Ineos Polyethylene NA
Innovene Polyethylene N.A.
Innovene Polyethylene N.A.
Innovene Polymers Inc.

Administrative Order on Consent for Remedial Investigation and Feasibility Study

U.S. Oil Recovery Superfund Site – 400 N. Richey Street Area of Investigation

Settling Respondent Signature Page

Agreed this 6th day of March, 2015.

For Settling Respondent Ink Jet Inc.

By: _____

Title: EHS + QA Manager

Administrative Order on Consent for Remedial Investigation and Feasibility Study

U.S. Oil Recovery Superfund Site – 400 N. Richey Street Area of Investigation

Settling Respondent Signature Page

Agreed this 25 day of March, 2015.

For Settling Respondent Keith Inc

By: _____

Title: Owner

Administrative Order on Consent for Remedial Investigation and Feasibility Study

U.S. Oil Recovery Superfund Site – 400 N. Richey Street Area of Investigation

Settling Respondent Signature Page

Agreed this 5th day of March, 2015.

For Settling Respondent Kern-Liebers Texas, Inc.

By: Wolfgang Kreschel

Title: Corporate Secretary

Administrative Order on Consent for Remedial Investigation and Feasibility Study

U.S. Oil Recovery Superfund Site – 400 N. Richey Street Area of Investigation

Settling Respondent Signature Page

Agreed this 2 day of March, 2015.

For Settling Respondent KMCO LLP

By: Jeff McInnis

Title: President

Administrative Order on Consent for Remedial Investigation and Feasibility Study

U.S. Oil Recovery Superfund Site – 400 N. Richey Street Area of Investigation

Settling Respondent Signature Page

Agreed this 2 day of March, 2015.

For Settling Respondent KMTEX, LTD

By: Jeff McFerrin

Title: President

Administrative Order on Consent for Remedial Investigation and Feasibility Study

U.S. Oil Recovery Superfund Site – 400 N. Richey Street Area of Investigation

Settling Respondent Signature Page

Agreed this 2nd day of MARCH, 2015.

For Settling Respondent LBC Houston, L.P.

By: _____

Title: Scott A. Sherman

Bracewell & Giuliani LLP

Counsel for LBC Houston L.P.

Administrative Order on Consent for Remedial Investigation and Feasibility Study

U.S. Oil Recovery Superfund Site – 400 N. Richey Street Area of Investigation

Settling Respondent Signature Page

Agreed this 17th day of MARCH, 2015.

For Settling Respondent LEEDO MANUFACTURING

By: 

Title: ENVIRONMENTAL HEALTH & SAFETY MANAGER

Administrative Order on Consent for Remedial Investigation and Feasibility Study

U.S. Oil Recovery Superfund Site – 400 N. Richey Street Area of Investigation

Settling Respondent Signature Page

Agreed this 6th day of February, 2015.

For Settling Respondent Louisiana-Pacific Corp.

By: _____

Title: Assoc. General Counsel

Administrative Order on Consent for Remedial Investigation and Feasibility Study

U.S. Oil Recovery Superfund Site – 400 N. Richey Street Area of Investigation

Settling Respondent Signature Page

Agreed this 9th day of February, 2015.

For Settling Respondent The Lubrizol Corporation

By: Michael D. Vaughn

Title: Vice President, Operations

Administrative Order on Consent for Remedial Investigation and Feasibility Study

U.S. Oil Recovery Superfund Site – 400 N. Richey Street Area of Investigation

Settling Respondent Signature Page

Agreed this 26th day of February, 2015.

For Settling Respondent Magellan Terminals Holdings, L.P.

By: _____

Title: Senior VP + General Counsel

RDS Legal

Administrative Order on Consent for Remedial Investigation and Feasibility Study

U.S. Oil Recovery Superfund Site – 400 N. Richey Street Area of Investigation

Settling Respondent Signature Page

Agreed this 10th day of March, 2015.

For Settling Respondent Marathon Petroleum Company LP

By: RD Bradley II

Title: Senior Vice President, Refining

APPROVED AS TO FORM

Administrative Order on Consent for Remedial Investigation and Feasibility Study

U.S. Oil Recovery Superfund Site – 400 N. Richey Street Area of Investigation

Settling Respondent Signature Page

Agreed this 18th day of February, 2015.

For Settling Respondent MEMC Pasadena, Inc

By: Stephanie E Russell

Title: Assistant Secretary

Administrative Order on Consent for Remedial Investigation and Feasibility Study

U.S. Oil Recovery Superfund Site – 400 N. Richey Street Area of Investigation

Settling Respondent Signature Page

Agreed this 17th day of MARCH, 2015.

For Settling Respondent Miller Transporters, Inc.

By: Jay L. Malone

Title: Vice President

Administrative Order on Consent for Remedial Investigation and Feasibility Study

U.S. Oil Recovery Superfund Site – 400N. Richey Street Area of Investigation

Settling Respondent Signature Page

Agreed this 20th day of March, 2015.

For Settling Respondent Mitsubishi Caterpillar Forklift America Inc.

By: _____ PJ Malak

Title: Secretary & General Counsel

Administrative Order on Consent for Remedial Investigation and Feasibility Study

U.S. Oil Recovery Superfund Site – 400 N. Richey Street Area of Investigation

Settling Respondent Signature Page

Agreed this 6 day of March, 2015.

For Settling Respondent National Oilwell Varco LP

By: _____

Title: Global HSE & Facilities Officer

National Oilwell Varco LP, on behalf of National Oilwell Varco, LP, Andersgauge USA Inc., Grant Prideco LP, Tuboscope, Varco Shaffer, T-3 Energy, Pipeline Valve Specialty, R&M Energy Systems, NOV Grand Robbins & Myers Energy Systems LP

Administrative Order on Consent for Remedial Investigation and Feasibility Study

U.S. Oil Recovery Superfund Site – 400 N. Richey Street Area of Investigation

Settling Respondent Signature Page

Agreed this 6TH day of February, 2015.

For Settling Respondent NORMAN TRANSPORT INC

By: _____

Title: PRES.

Administrative Order on Consent for Remedial Investigation and Feasibility Study

U.S. Oil Recovery Superfund Site – 400 N. Richey Street Area of Investigation

Settling Respondent Signature Page

Agreed this 3rd day of March, 2015.

For Settling Respondent, ONEOK Hydrocarbon Southwest, L.L.C.

By: _____

Jeremy D. Wiese

Title: Vice President, ES&H and Asset Integrity

Administrative Order on Consent for Remedial Investigation and Feasibility Study

U.S. Oil Recovery Superfund Site – 400 N. Richey Street Area of Investigation

Settling Respondent Signature Page

Agreed this 3 day of March, 2015.

For Settling Respondent O'Rourke Dist. Co., Inc. d/b/a Select Environmental

By: _____

Title: President & CFO

Administrative Order on Consent for Remedial Investigation and Feasibility Study

U.S. Oil Recovery Superfund Site – 400 N. Richey Street Area of Investigation

Settling Respondent Signature Page

Agreed this 19th day of FEBRUARY, 2015.

For Settling Respondent PILOT INDUSTRIES OF TEXAS

By: _____

Title: VP - TECHNOLOGY + BUSINESS SERVICES

Administrative Order on Consent for Remedial Investigation and Feasibility Study

U.S. Oil Recovery Superfund Site – 400 N. Richey Street Area of Investigation

Settling Respondent Signature Page

Agreed this 3 day of MARCH, 2015.

For Settling Respondent PLT3 LIABILITIES HOLDINGS, L.P. f/k/a OXID, L.P.

By: _____

Title: VP + GENERAL COUNSEL

Administrative Order on Consent for Remedial Investigation and Feasibility Study

U.S. Oil Recovery Superfund Site – 400 N. Richey Street Area of Investigation

Settling Respondent Signature Page

Agreed this 6th day of April, 2015.

For Settling Respondent Powell Industries, Inc., Powell Electrical Manufacturing Company, and Powell Electrical Systems

By: [signature]

Title: VICE PRESIDENT

Administrative Order on Consent for Remedial Investigation and Feasibility Study

U.S. Oil Recovery Superfund Site – 400 N. Richey Street Area of Investigation

Settling Respondent Signature Page

Agreed this 16th day of March, 2015.

For Settling Respondent Progressive Waste Solutions of TX, Inc.

By: _____

Title: Thomas J. Fowler, Vice President

Administrative Order on Consent for Remedial Investigation and Feasibility Study

U.S. Oil Recovery Superfund Site – 400 N. Richey Street Area of Investigation

Settling Respondent Signature Page

Agreed this 17 day of March, 2015.

For Settling Respondent Quala Systems, Inc.

By: _____

John T. Wilson

Title: SVP, Gen. Counsel and Corp. Sec.

Administrative Order on Consent for Remedial Investigation and Feasibility Study

U.S. Oil Recovery Superfund Site – 400 N. Richey Street Area of Investigation

Settling Respondent Signature Page

Agreed this 10th day of April, 2015.

For Settling Respondent Safety Kleen Systems, Inc.

By: _____

Title: Assistant Secretary

Administrative Order on Consent for Remedial Investigation and Feasibility Study

U.S. Oil Recovery Superfund Site – 400 N. Richey Street Area of Investigation

Settling Respondent Signature Page

Agreed this 24th day of February, 2015.

For Settling Respondent _____

By: Thorleif Egeli

Title: Vice President, Schlumberger Technology Corporation

Administrative Order on Consent for Remedial Investigation and Feasibility Study

U.S. Oil Recovery Superfund Site – 400 N. Richey Street Area of Investigation

Settling Respondent Signature Page

Agreed this _____ day of _____, 2015.

For Settling Respondent Schneider National Bulk Carriers

By: George S Lorander

Title: Sr. VP + CFO

Administrative Order on Consent for Remedial Investigation and Feasibility Study

U.S. Oil Recovery Superfund Site – 400 N. Richey Street Area of Investigation

Settling Respondent Signature Page

Agreed this 2 day of March, 2015.

For Settling Respondent South Coast Terminals LP

By: Jeff McFerrin

Title: Corporate Secretary

Administrative Order on Consent for Remedial Investigation and Feasibility Study

U.S. Oil Recovery Superfund Site – 400 N. Richey Street Area of Investigation

Settling Respondent Signature Page

Agreed this 4th day of March, 2015.

For Settling Respondent Southwest Shipyard, L.P.

By: David P. Helmer

Title: Vice President of Env. Affairs

Administrative Order on Consent for Remedial Investigation and Feasibility Study

U.S. Oil Recovery Superfund Site – 400 N. Richey Street Area of Investigation

Settling Respondent Signature Page

Agreed this 26th day of FEBRUARY, 2015.

For Settling Respondent STOLT-NIELSEN USA INC.

By: _____

Title: SECRETARY

Administrative Order on Consent for Remedial Investigation and Feasibility Study

U.S. Oil Recovery Superfund Site – 400 N. Richey Street Area of Investigation

Settling Respondent Signature Page

Agreed this 24th day of February, 2015.

For Settling Respondent Styrolution America LLC f/k/a INEOS NOVA LLC and INEOS Styrenics LLC

By: _____

Title: Vice President

By: Kenneth M. Hale

Title: Senior Legal Counsel - Americas

Administrative Order on Consent for Remedial Investigation and Feasibility Study

U.S. Oil Recovery Superfund Site – 400 N. Richey Street Area of Investigation

Settling Respondent Signature Page

Agreed this 23rd day of March, 2015.

For Settling Respondent Sun Coast Resources, Inc.

By: _____

Title: Treasurer

Administrative Order on Consent for Remedial Investigation and Feasibility Study

U.S. Oil Recovery Superfund Site – 400 N. Richey Street Area of Investigation

Settling Respondent Signature Page

Agreed this 9th day of March, 2015.

For Settling Respondent Sun Products Corp

By: _____

Title: Shareholder - atty for Respondent

Administrative Order on Consent for Remedial Investigation and Feasibility Study

U.S. Oil Recovery Superfund Site – 400 N. Richey Street Area of Investigation

Settling Respondent Signature Page

Agreed this 10th day of February, 2015.

For Settling Respondent Superior Packaging & Distribution

By: Cathrine N. Crabtree

Title: Vice President

Administrative Order on Consent for Remedial Investigation and Feasibility Study

U.S. Oil Recovery Superfund Site – 400 N. Richey Street Area of Investigation

Settling Respondent Signature Page

Agreed this 2nd day of March, 2015.

For Settling Respondent Targa Midstream Services LLC (f/k/a Dynegy Midstream Services, L.P.), and Targa Downstream LLC

By: _____

Title: Vice President - Operations

TSM

Administrative Order on Consent for Remedial Investigation and Feasibility Study

U.S. Oil Recovery Superfund Site – 400 N. Richey Street Area of Investigation

Settling Respondent Signature Page

Agreed this _____ day of _____, 2015.

For Settling Respondent Texas Barge & Boat Inc.

By: _____

Title: CEO

Administrative Order on Consent for Remedial Investigation and Feasibility Study

U.S. Oil Recovery Superfund Site – 400 N. Richey Street Area of Investigation

Settling Respondent Signature Page

Agreed this 30th day of March, 2015.

For Settling Respondent Texas Oil & Gathering, Inc

By: _____

Title: President

Administrative Order on Consent for Remedial Investigation and Feasibility Study

U.S. Oil Recovery Superfund Site – 400 N. Richey Street Area of Investigation

Settling Respondent Signature Page

Agreed this 24th day of March, 2015.

For Settling Respondent Texas Tile Manufacturing LLC

By: _____

Title: President

Administrative Order on Consent for Remedial Investigation and Feasibility Study

U.S. Oil Recovery Superfund Site – 400 N. Richey Street Area of Investigation

Settling Respondent Signature Page

Agreed this 17th day of March, 2015.

For Settling Respondent Texas United Pipe

By: Keith Hopson

Title: Counsel for Texas United Pipe

Administrative Order on Consent for Remedial Investigation and Feasibility Study

U.S. Oil Recovery Superfund Site – 400 N. Richey Street Area of Investigation

Settling Respondent Signature Page

Agreed this 6th day of March, 2015.

For Settling Respondent Texmark Chemicals, Inc.

By: _____

Title: President

Administrative Order on Consent for Remedial Investigation and Feasibility Study

U.S. Oil Recovery Superfund Site – 400 N. Richey Street Area of Investigation

Settling Respondent Signature Page

Agreed this 6 day of March, 2015.

For Settling Respondent TPC Group, LLC

By: _____

Title: Vice President & General Counsel

Administrative Order on Consent for Remedial Investigation and Feasibility Study

U.S. Oil Recovery Superfund Site – 400 N. Richey Street Area of Investigation

Settling Respondent Signature Page

Agreed this 4th day of March, 2015.

For Settling Respondent Trimac Transportation Inc. FKA Trimac Transportation South Inc.

By: _____

Title: Vice President

Administrative Order on Consent for Remedial Investigation and Feasibility Study

U.S. Oil Recovery Superfund Site – 400 N. Richey Street Area of Investigation

Settling Respondent Signature Page

Agreed this 18 day of MARCH, 2015.

For Settling Respondent ~~TT BARGE CLEANING M.L.E 183, INC~~ TT BARGE SERVICES M.L.E 237, LLC

By: Raymond B Greenwell RAYMOND GREENWELL

Title: Officer MANAGER

Administrative Order on Consent for Remedial Investigation and Feasibility Study

U.S. Oil Recovery Superfund Site – 400 N. Richey Street Area of Investigation

Settling Respondent Signature Page

Agreed this 6th day of March, 2015.

For Settling Respondent United Airlines, Inc. as indemnified by Ashland, Inc.

By: Steven S. Fao

Title: Assistant General Counsel

Administrative Order on Consent for Remedial Investigation and Feasibility Study

U.S. Oil Recovery Superfund Site – 400 N. Richey Street Area of Investigation

Settling Respondent Signature Page

Agreed this 11 day of February, 2015.

For Settling Respondent United States Steel Corporation

By: Andrew G. Thiros

Andrew G. Thiros

Title: Counsel-Environmental

Administrative Order on Consent for Remedial Investigation and Feasibility Study

U.S. Oil Recovery Superfund Site – 400 N. Richey Street Area of Investigation

Settling Respondent Signature Page

Agreed this 5th day of March, 2015.

For Settling Respondent Valero Refining-Texas, L.P., Valero Terminaling & Distribution Co., Valero Marketing & Supply Co.

SMH

By: _____

Kirk A. Saffell

Title: Sr. Vice President

Administrative Order on Consent for Remedial Investigation and Feasibility Study

U.S. Oil Recovery Superfund Site – 400 N. Richey Street Area of Investigation

Settling Respondent Signature Page

Agreed this 3rd day of March, 2015.

For Settling Respondent Vopak Logistics Services USA, Inc. on its own behalf and on behalf of Vopak Terminals Galena Park, Inc.

By: _____

Title: Director of Finance & Control

Administrative Order on Consent for Remedial Investigation and Feasibility Study

U.S. Oil Recovery Superfund Site – 400 N. Richey Street Area of Investigation

Settling Respondent Signature Page

Agreed this 25th day of MARCH, 2015.

For Settling Respondent WALGAR, INC.

By: [signature]

Title: Vice President, Global Engineering/Industrial

Administrative Order on Consent for Remedial Investigation and Feasibility Study

U.S. Oil Recovery Superfund Site – 400 N. Richey Street Area of Investigation

Settling Respondent Signature Page

Agreed this 9th day of March, 2015.

For Settling Respondent Waste Management of Texas, Inc. on behalf of itself, USA Waste of Texas Landfill Inc., S&J Landfill Limited Partnership and Cougar Landfill, Inc.

By: _____

Title: Area Director

Administrative Order on Consent for Remedial Investigation and Feasibility Study

U.S. Oil Recovery Superfund Site – 400 N. Richey Street Area of Investigation

Settling Respondent Signature Page

Agreed this 4th day of March, 2015.

For Settling Respondent: Weatherford U.S., L.P., as Predecessor in Interest of PChem, Inc.

By: [signature]

Title: Vice President & Assistant Secretary

Administrative Order on Consent for Remedial Investigation and Feasibility Study

U.S. Oil Recovery Superfund Site – 400 N. Richey Street Area of Investigation

Settling Respondent Signature Page

Agreed this 17TH day of MARCH, 2015.

For Settling Respondent WEST TEXAS DRUM CO. LTD. II

By: Charles R. Ridge

Title: PRESIDENT

Administrative Order on Consent for Remedial Investigation and Feasibility Study

U.S. Oil Recovery Superfund Site – 400 N. Richey Street Area of Investigation

Settling Respondent Signature Page

Agreed this 9 day of March, 2015.

For Settling Respondent Western Waste of Texas, LLC

By: _____

Title: Area Director

APPENDIX A –SETTLING RESPONDENTS
REMEDIAL INVESTIGATION AND FEASIBILITY STUDY
U.S. OIL RECOVERY SITE – AREA OF INVESTIGATION-1
PASADENA, TX

Air Products and Chemicals, Inc.

Air Products LLC, as successor in interest to Air Products, L.P.

Akzo Nobel Functional Chemicals LLC, as successor to Akzo Nobel Polymer Chemicals LLC

Allied Petrochemical, LLC

American Acryl L.P.

American Spring Wire Corporation

American Valve & Hydrant Mfg. Company

Andrews Transport, L.P.

Ashland Inc.

Baker Petrolite Corporation

Baker Hughes Oilfield Operations, Inc.

BASF Corporation

Bayer CropScience Inc.

Blentech Corporation

BNSF Railway Company

BP Products North America Inc.

BP Amoco Chemical Company, for and on behalf of BP Solvay Polyethelyne

CenterPoint Energy Houston Electric LLC

Channel Shipyard Company Inc.

Clean Harbors San Leon, Inc. f/k/a/ DuraTherm, Inc.

Cray Valley U.S.A., LLC f/k/a Sartomer Company, Inc.

Crown, Cork & Seal Inc.

Dana Container, Inc.

DCP Midstream, LP, on behalf of DCP Southeast Texas Plants LLC f/k/a Raywood Gas Plant, LLC

Domco Products Texas Inc.

The Dow Chemical Company

Ecolab Inc.

Effective Environmental, Inc.

Enable Pipeline Services, LLC (formerly CenterPoint Energy Pipeline Services)

Ensource Corporation

Enterprise Products Operating LLC on behalf of Enterprise Products Operating, LLC, Enterprise Refined Products Company, LLC, Enterprise TE Products Pipeline Company, LLC, fka TEPPCO, and Enterprise Transportation Company

Ethyl Corporation

Evonik Oil Additives, USA, Inc. (f/k/a Evonik RohMax USA, Inc.)

Explorer Pipeline Company

FMC Technologies, Inc.

Fort Bend Regional Landfill, L.P. by Waste Corporation, L.P., its sole general partner

Garner Environmental Services, Inc.

GATX Corporation

General Dynamics Ordnance and Tactical Systems, Inc.

General Electric Company

Groendyke Transport, Inc.

Hexion Inc. f/k/a Momentive Specialty Chemicals Inc.

Houston Pipe Line Company LP

Hydrocarbon Resource Recovery, L.L.C.

INEOS Polyethylene NA

Innovene Polymers Inc.

Innovene Polyethylene N.A.

InkJet, Inc.

Keith, Inc.

Kern-Liebers Texas, Inc.

KMCO, LLP

KMTEX, LTD.

LBC Houston, L.P.

Leedo Manufacturing

Louisiana-Pacific Corporation

The Lubrizol Corporation

Magellan Terminals Holdings, L.P.

Marathon Petroleum Company LP

MEMC Pasadena, Inc.

Miller Transporters, Inc.

Mitsubishi Caterpillar Forklift America Inc.

National Oilwell Varco LP on behalf of National Oilwell Varco, L.P., Andersgauge USA Inc., Grant Prideco LP, Turboscope, Varco Shaffer, T-3 Energy, Pipeline Valve Specialty, R&M Energy Systems, NOV and Robbins & Myers Energy Systems LP

Norman Transport, Inc.

ONEOK Hydrocarbon Southwest, L.L.C.

O'Rourke Dist. Co., Inc. d/b/a/ Select Environmental

Pilot Industries of Texas

PLT3 Liabilities Holdings, L.P. f/k/a Oxid, L.P.

Powell Industries, Inc.

Powell Electrical Systems, Inc. successor to Powell Electrical Manufacturing Company

Progressive Waste Solutions of TX, Inc.

Quala Systems, Inc.

Safety Kleen Systems, Inc.

Schlumberger Technology Corporation

Schneider National Bulk Carriers, Inc.

South Coast Terminals LP

Southwest Shipyard, L.P.

Stolt-Nielsen USA Inc.

Styrolution America LLC f/k/a INEOS NOVA LLC and f/k/a INEOS Styrenics LLC

Sun Coast Resources, Inc.

The Sun Products Corporation

Superior Packaging & Distribution, L.P.

Targa Downstream LLC

Targa Midstream Services LLC (f/k/a Dynegy Midstream Services, L.P.)

Texas Barge & Boat, Inc.

Texas Oil and Gathering, Inc.

Texas Tile Manufacturing LLC

Texas United Pipe

Texmark Chemicals, Inc.

TPC Group, LLC

Trimac Transportation Inc. f/k/a Trimac Transportation South Inc.

TT Barge Services Mile 237, LLC

TT Barge Cleaning Mile 183, Inc.

United Airlines, Inc.

United States Steel Corporation

Valero Marketing & Supply Co.

Valero Refining Company – Texas, LP

Valero-Terminaling & Distribution Co.

Vopak Logistics Services USA, Inc. on its own behalf and on behalf of Vopak Terminals Galena Park, Inc.

Walbar, Inc. d/b/a Engine Components Goodrich Corporation

Waste Management of Texas, Inc., on behalf of itself, USA Waste of Texas Landfill, Inc., Cougar Landfill, Inc. and S&J Landfill Limited Partnership

Weatherford U.S., L.P., as predecessor in interest of P Chem, Inc.

West Texas Drum Company

Western Waste of Texas, LLC

# APPENDIX B STATEMENT OF WORK
# REMEDIAL INVESTIGATION AND FEASIBILITY STUDY
# U.S. OIL RECOVERY SITE – AREA OF INVESTIGATION-1
# PASADENA, TX

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# PASADENA, HARRIS COUNTY, TEXAS

## 1. INTRODUCTION

1. This Statement of Work (SOW) provides an overview of work that will be carried out by respondents as they implement a Remedial Investigation and Feasibility Study (RI/FS) for the US Oil Recovery Site (USOR) Area of Investigation-1 (AOI-1). This RI/FS SOW is attached to the Administrative Order on Consent (AOC) for Remedial Investigation/Feasibility Study for AOI-1 and is a supporting document for the AOC. Technical work described in the SOW is intended to provide more information to Respondents for purposes of implementing the AOC and is not intended to change the meaning of any AOC language. This SOW is also consistent with both the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) and the National Contingency Plan (NCP). Any discrepancies between the AOC and SOW are unintended, and whenever necessary, the AOC will control in any interpretive disputes.

2. The RI/FS is expected to be an iterative process. This SOW outlines a decision process that will be used to focus sampling programs to gather data that are needed for the decision process. The U.S. Environmental Protection Agency (EPA) understands there may be concern on the part of Respondents that such an iterative process could lead to substantial increases in the size, cost, and scope of the RI/FS. However, EPA has an obligation under CERCLA to protect human health and the environment wherever hazardous substances have been discharged or migrated in the environment. To balance these competing interests, EPA's Office of Solid Waste and Emergency Response is promoting more effective strategies (i.e., Triad Approach) for characterizing, monitoring, and cleaning up hazardous waste sites. The Triad Approach integrates systematic planning, dynamic work plans, and on-site analytical tools used to support decisions about hazardous waste sites. Additional information regarding the Triad Approach is attached and can be found at the following website: http://www.clu-in.org/conf/tio/triad_012303.

3. The purpose of the RI/FS is to investigate the nature and extent of contamination for AOI-1, to assess the potential risk to human health and the environment, to develop and evaluate potential remedial action alternatives, and to recommend a preferred alternative. The RI and FS are interactive and will be conducted concurrently, to the extent practicable in a manner that allows information and data collected during the RI to influence the development of remedial alternatives during the FS, which in turn affect additional information and data needs and the scope of any necessary treatability studies and risk assessments.

4. Respondents will conduct the RI/FS and will produce draft RI and FS reports that are in accordance with the AOC. The RI/FS will be consistent with the Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA (U.S. EPA, Office of Emergency and Remedial Response, October 1988) Data Quality Objectives (DQOs) planning process (EPA QA /G-4. August

2000), and other applicable guidance that EPA uses in conducting an RI/FS (a list of the primary guidance is attached), including potentially applicable guidance released by EPA after the effective date of this SOW. EPA is aware that not all RI/FS guidances may be applicable to AOI-1. EPA Project Managers for sites have the authority under the NCP to determine when application of any guidance would be inappropriate. Respondents may raise such guidance issues they consider pertinent during the implementation of the AOC. EPA's decisions regarding guidance applicability will be incorporated into document approval correspondence or in other written correspondence as appropriate.

5. The RI/FS Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA describes the suggested report format and content for the draft RI and FS reports. Respondents will furnish all necessary personnel, materials, and services needed for, or incidental to performing the RI/FS, except as otherwise specified in the AOC.

6. At the completion of the RI/FS, EPA will be responsible for the selection of an AOI-1 remedy and will document this selection in one or more Records of Decision (RODs). The response action alternatives selected by EPA will meet the cleanup standards specified in Section 121 of CERCLA, 42 U.S.C. § 9621; the selected remedy will be protective of human health and the environment, will be in compliance with, or include a waiver of, applicable or relevant and appropriate requirements (ARARs), will be cost-effective, will utilize permanent solutions and alternative treatment technologies or resource recovery technologies, to the maximum extent practicable, will incorporate sustainability considerations, and will address the statutory preference for treatment as a principal element, as appropriate under the NCP. The final RI/FS report, as approved by EPA, will, with the administrative record, form the basis for the selection of AOI-1's remedy and will provide the information necessary to support development of one or more RODs.

As specified in Section 104(a)(I) of CERCLA, 42 U.S.C. § 9604(a)(I), EPA will provide oversight of Respondents' activities throughout implementation of the AOC. Respondents will support EPA's initiation and conduct of activities related to implementation of oversight activities.

Purpose of the Statement of Work

7. This SOW sets forth certain requirements of the AOC for implementation of the Work pertaining to the RI/FS for AOI-1. The Respondents shall undertake the RI/FS according to the AOC, including, but not limited to, this SOW and the attached Scope of Work.

Objectives of the Remedial Investigation/Feasibility Study

8. The objectives of the RI/FS are to investigate the nature and extent of contamination at or from AOI-1 and to develop and evaluate potential remedial alternatives, in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA, 42 U.S.C. § 9601, et seq.); as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA); and in accordance with the National Oil and Hazardous Substances Pollution Contingency Plan (National Contingency Plan (NCP)). Specifically, these objectives are to determine the presence or absence, types, and quantities (concentrations) of contaminants; mechanism of contaminant release to pathway(s); direction of pathway(s) transport; boundaries of source(s) and pathway(s); and environmental/public health receptors.

Scope of Remedial Investigation and Feasibility Study

9. The general scope of the R l/FS shall be to address all contamination at AOI-1 resulting from the hazardous substances present at AOI-1.

Description of the Site

10. AOI-1 of the USOR Site is located at 400 N. Richey Street, north of Highway 225, in Pasadena, Texas. U.S. Oil Recovery previously conducted operations at AOI-1, where it received municipal and industrial Class I and Class II wastewater, characteristically hazardous waste, used oil and oily sludges, and municipal solid waste. . In an initial response action, the Environmental Protection Agency (EPA) took steps to contain off-site migration, mitigate the threat to the public and to Vince Bayou, and stabilize AOI-1 in July 2010, November 2010, and January 2011. As part of those efforts, more than 800,000 gallons of non- hazardous oily liquid waste were transported off-site. Hazardous and non-hazardous sludges open to the elements and contaminating storm water were removed and also disposed off-site.

11. Pursuant to an Administrative Order on Consent, dated August 25, 2011, EPA has continued to protect the public health, welfare and the environment, including Vince Bayou, by overseeing subsequent Site stabilization activities performed by some of the Potentially Responsible Parties (known as the "PRP Group"). Stabilization activities have included Site security patrols, regular inspections of freeboard in secondary containment areas and truck bays, and pump down/removal of liquids as necessary to prevent releases from those areas. As part of those efforts, more than 750,000 gallons of non- hazardous oily liquid waste have been transported off-site for disposal from AOI-1. The PRP Group also obtained a State-Court appointment of a Receiver with legal custody and control over the AOI-1 property. Part of the Receiver's role is to assist the PRP Group in its performance of the EPA-required actions at AOI-1. The PRP Group will continue on-going stabilization efforts under EPA oversight as needed to protect the public health, welfare and the environment, including Vince Bayou.

## I I. PERFORMANCE STANDARDS

12. The Performance Standards for this RI/FS shall include substantive requirements, criteria, or limitations which are specified in the AOC, including, but not limited to, this SOW. Submissions approved by the EPA are an enforceable part of the AOC: consequently, cleanup goals and other substantive requirement, criteria, or limitations which are specified in EPA-approved submissions are Performance Standards. The EPA will use the Performance Standards to determine if the work, including, but not limited to, the RI/FS, has been completed. The Respondents shall ensure that the RI/FS is consistent with the EPA's "Interim Final Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA" (EPA 1988b, hereinafter "the RI/FS guidance") and other applicable sections of EPA guidance cited herein. If the EPA approves a schedule for any work subsequent to execution of the AOC, the revised schedule shall supersede any timing requirements established in the AOC. In the event there is a conflict between terms of the AOC and any of the other Performance Standards, the terms of the AOC will control. For example, on page B-2, the RI/FS guidance says that the Field Investigation is complete when the contractors or subcontractors are demobilized from the field; however, if the EPA, pursuant to the AOC, requires the Respondents to perform additional field investigation activities once the contractors or subcontractors have demobilized, the Respondents shall remobilize the contractors or subcontractors and perform the additional work.

## III. ROLE OF THE EPA

13. The EPA's approval of deliverables, including, but not limited to, submissions, allows the Respondents to proceed to the next steps in implementing the Work of the RI/FS. The EPA's approval does not imply any warranty of performance, nor does it imply that the RI/FS, when completed, will function properly and be ultimately accepted by the EPA. The EPA retains the right to disapprove submissions during the RI/FS. The EPA may disapprove deliverables including, but not limited to, submissions concerning such matters as the contractor selection, plans and specifications, work plans, processes, sampling, analysis and any other deliverables within the context of the AOC. If a submission is unacceptable to the EPA, the EPA may require the Respondents to make modifications in the submission, and the EPA may require the Respondents to do additional work to support those modifications. That is, if a submission reports certain work that is unacceptable to the EPA, the EPA may require the Respondents to modify the submission text and to perform the work until it is acceptable to the EPA. The Respondents shall modify the submission and perform the work as required by the EPA.

## IV. RESPONDENTS' KEY PERSONNEL

### Respondent's Project Coordinator

14. When necessary, as determined by the EPA, the EPA will meet with the Respondents and discuss the performance and capabilities of the Respondent's Project Coordinator. When the Project Coordinator's performance is not satisfactory, as determined by the EPA, the Respondents shall take action, as requested by the EPA, to correct the deficiency. If, at any time, the EPA determines that the Project Coordinator is unacceptable for any reason, the Respondents, at the EPA's request, shall bar the Project Coordinator from any work under the AOC and give notice of the Respondent's selected new Project Coordinator to the EPA.

### Respondent's Quality Assurance Manager

15. Oversight, including, but not limited to confirmation sampling, by the Respondent's Quality Assurance Manager (QA Manager) will be used to provide confirmation and assurance to the Respondents and to the EPA that the Respondents are performing the RI/FS in a manner that will meet the Performance Standards. The QA Manager shall ensure that the work performed by the Respondents meets the standards in the Quality Assurance Project Plan described in this SOW. The QA Manager shall selectively test and inspect the work performed by the Respondents.

## V. TASKS TO BE PERFORMED AND DELIVERABLES

### Conduct of the Remedial Investigation and Feasibility Study

16. This SOW, in addition to the attached Scope of Work, specifies the Work to be performed and the deliverables which shall be produced by the Respondents. The Respondents shall conduct the RI/FS in accordance with this SOW, and the attached Scope of Work, and all applicable guidance that the EPA uses in conducting RI/FS projects under CERCLA, as amended by SARA, as well as any additional requirements in the AOC. The Respondents shall furnish all necessary personnel, materials, and services

necessary for, and incidental to, performance of the RI/FS, except as otherwise specified in the AOC or SOW.

Submittal of Deliverables

17. All draft and final deliverables specified in this SOW shall be provided in hard and/or electronic (specifically, Microsoft ® Word and Adobe ® PDF format) versions (deliverable and quantity of copies will be specified by the RPM prior to document issuance), by the Respondents, to the EPA), EPA's RI/FS Oversight Contractor, Texas Commission on Environmental Quality (TCEQ), and the Federal/State Natural Resource Trustees[1] (except for bi-monthly status reports, which will be provided to EPA only and in electronic format only). Final deliverables shall be provided in hard copy and electronic format (specifically, Adobe® PDF format) to the Information Repository established for the Site. The EPA shall be responsible for placing the required deliverables into the Information Repository. The Respondents shall provide the EPA with any other documentation for the Information Repository as requested by the EPA's Remedial Project Manager. Additionally, all deliverables specified in this SOW shall be submitted, by the Respondents, according to the requirements of this SOW and Appendix A of this SOW (Schedule of Deliverables/Meetings), as amended through the RI/FS process. In addition to the Deliverables identified in Appendix A, Respondents shall provide to EPA an updated database with the bi-monthly status report for reporting periods in which validated data and maps have been uploaded to the database.

Development of Deliverables

18. All deliverables shall be developed in accordance with the guidance documents listed in Appendix B[2] (Guidance Documents) to this SOW. Subject to the provisions regarding EPA Approval of Plans and other Submissions in Section X of the AOC, if the EPA disapproves of or requires revisions to any of these deliverables, in whole or in part, the Respondents shall submit to the EPA, within sixty (60) days after completing discussion of EPA's directions or comments on the deliverable (and in no event later than ninety (90) calendar days after receiving EPA's comments or directions on the deliverable), revised plans which are responsive to such directions or comments.

Tasks to be Performed by the Respondents

19. The Respondents shall perform each of the following Tasks (Tasks 1-10) as specified in this SOW. These Tasks shall be developed in accordance with the guidance documents listed in Appendix B[2] (Guidance Documents) to this SOW and any additional guidance applicable to the RI/FS process.

[1]The Federal/State Natural Resource Trustees for the Site have been identified as the U.S. Department of Interior, U.S. Fish and Wildlife Service, United States Geological Survey, Texas Commission on Environmental Quality, Texas Parks and Wildlife Department, and Texas General Land Office.

[2]Appendix B of this SOW does not include all guidance documents that are applicable to the RI/FS for the Site. The Respondents should consult with EPA's Remedial Project Manager for additional guidance and to ensure that the guidance documents have not been superseded by more recent guidance.

Task 1: Scoping

20. The purpose of Task 1 (Project Planning) is to determine how the RI/FS will be managed and controlled. The following activities shall be performed by the Respondents as part of Task 1.

a) The Respondents shall contact the EPA's Remedial Project Manager within fourteen (14) calendar days after the effective date of the AOC to schedule a scoping phase meeting or conference call.

b) The Respondents shall compile, review, and evaluate all existing Site data. The Respondents shall refer to Table 2-1 (Data Collection Information Sources) of the RI/FS Guidance for a list of data collection information sources. The Respondents shall exhaust, as necessary, all of those sources in compiling the data.

The Respondents shall compile all existing information describing hazardous substance sources, migration pathways, and potential human and environmental receptors. The Respondents shall compile all existing data relating to the varieties and quantities of hazardous substances released at or from the Site. The Respondents shall compile and review all available data relating to past disposal practices of any kind on and near the Site. The Respondents shall compile existing data concerning the physical and chemical characteristics of the hazardous substances, and their distribution among the environmental media (ground water, soil, surface water, sediments, and air) on and near the Site.

The Respondents shall compile existing data which resulted from any previous sampling events that may have been conducted on and near AOI-1. The data will be reviewed for QA/QC purposes to assess if the data are reliable and able to be utilized in the RI/FS process. If the data are deemed not to be usable, the data will only be used to provide general information on the location, depth, and analytical laboratory results; which will provide assistance in selection of future sample locations. The Respondents shall gather existing data which describes previous responses that have been conducted on and near AOI-1 by local, state, federal, or private parties.

The Respondents shall gather existing information regarding geology, hydrogeology, hydrology (including floodplains), meteorology (including previous hurricane activity), and ecology of AOI-1. The Respondents shall gather existing data regarding background ground water, background soil, background surface water, background sediments, and background air characteristics (if necessary). These data will be reviewed for QA/QC purposes to assess if the data are reliable and able to be utilized in the RI/FS process. If the data are deemed not to be usable, the data will only be used to provide general information on the location, depth, and analytical laboratory results; which will provide assistance in selection of future sample locations. The Respondents shall gather existing data regarding demographics, land use, property boundaries, and zoning. The Respondents shall gather existing data available electronically via online databases (i.e., Texas Water Development Board, Texas Commission on Environmental Quality, and Texas Department of Licensing and Regulation), which identifies and locates residential, municipal, irrigation, or industrial water wells located within 1-mile of AOI-1. The Respondents shall gather existing data which identifies surface water uses for areas surrounding AOI-1 including, but not limited to,

downstream of AOI-1. The Respondents shall gather existing information describing the flora and fauna of AOI-1. The Respondents shall gather existing data regarding state and federally listed threatened, endangered, or rare species; sensitive environmental areas; or critical habitats on and near AOI-1. The Respondents shall compile any existing ecological assessment data. This may include, but is not limited to, results of acute or chronic toxicity tests using AOI-1 surface water and/or sediment, analysis of invertebrate and/or fish tissue concentrations, analysis of wildlife tissue and egg concentrations, and any wildlife or invertebrate census or community survey information.

The Respondents shall use data compiled and reviewed to describe additional data needed to characterize AOI-1, to better define potential ARARs, and to develop a range of preliminarily identified remedial alternatives. All previously collected data shall be reviewed to determine compliance with the data quality requirements for the project and that it is suitable for use in the RI/FS.

Respondents and EPA have developed the Technical Scope of Work included as Appendix D to this SOW to address some, but not all, of the above Task 1 requirements. This appendix will be used to prepare the Draft RI/FS Work Plan as required in Task 2 below, but the appendix is not intended to replace or supersede the RI/FS Work Plan.

Task 2: Remedial Investigation and Feasibility Study Work Plan

21. The Respondents shall prepare and submit a Draft RI/FS Work Plan (WP) within sixty (60) calendar days after the Scoping Phase Meeting or conference call. The Respondents shall use information from appropriate EPA guidance and technical direction provided by the EPA's Remedial Project Manager as the basis for preparing the Draft RI/FS WP. The RI/FS shall be conducted in a manner that minimizes environmental impacts in accordance with the EPA's Principles for Greener Cleanups (EPA 2009a.) and EPA Region 6 Clean and Green Policy (EPA 2009b.) to the extent consistent with the National Contingency Plan (NCP), 40 CFR Part 300. The Best Management Practices available at http://www.cluin.org/greenremediation/ shall be considered.

22. The Respondents shall develop the Draft RI/FS WP in conjunction with the Draft RI/FS Sampling and Analysis Plan (Task 3 (RI/FS Sampling and Analysis Plan)) and the Draft RI/FS Health and Safety Plan (Task 4 (RI/FS Health and Safety Plan)), although each plan may be submitted to the EPA under separate cover. The Draft RI/FS WP shall include a comprehensive description of the Work to be performed, the methodologies to be utilized, and a corresponding schedule for completion. In addition, the Draft RI/FS WP shall include the rationale for performing the required activities.

23. Specifically, the Draft RI/FS WP shall present a statement of the problem(s) and potential problem(s) posed by AOI-1 and the objectives of the RI/FS. Furthermore, the Draft RI/FS WP shall include a background summary setting forth a description of AOI-1 which includes the geographic location of AOI-1, and to the extent possible, a description of the AOI-1's physiography, hydrology, geology, and demographics; AOI-1's ecological, cultural and natural resource features; a synopsis of AOI-1 history and a description of previous responses that have been conducted at AOI-1 by local, state, federal, or private parties; and a summary of the existing data in terms of physical and chemical characteristics of the contaminants identified, and their distribution among the environmental media at the

Site. In addition, the Draft RI/FS WP shall include a description of AOI-1 management strategy developed during scoping, and a preliminary identification of remedial alternatives and data needs for evaluation of remedial alternatives. The Draft RI/FS WP shall reflect coordination with treatability study requirements (Task 8 (Treatability Studies)), if any, and will show a process for and manner of identifying Federal and State chemical-, location-, and action-specific ARARs.

24. Finally, the major part of the Draft RI/FS WP shall be a detailed description of the Tasks (Tasks 1-10) to be performed, information needed for each Task and for the Baseline Human Health and Ecological Risk Assessments, information to be produced during and at the conclusion of each Task, and a description of the Work products and deliverables that the Respondents will submit to the EPA. This includes the deliverables set forth in the remainder of this SOW; a schedule for each of the required activities which is consistent with the EPA's guidance documents; bi-monthly reports to the EPA as specified in Appendix A (Schedule of Deliverables/Meetings); and meetings and presentations to the EPA at the conclusion of each major phase of the RI/FS. The Respondents shall refer to the EPA's guidance document entitled, "Interim Final Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA" (EPA 1988b) which describes the suggested RI/FS WP format and content.

25. The Respondents are responsible for fulfilling additional data and analysis needs identified by the EPA consistent with the general scope and objectives of this RI/FS. Because of the nature of AOI-1 and the iterative nature of the RI/FS, additional data requirements and analyses may be identified throughout the process. If any significant additional Work is required to meet the objectives stated in the RI/FS WP, based upon new information obtained during the RI/FS, the Respondents shall submit a Draft RI/FS WP Refinement/Modification Notice to the EPA for review and approval prior to any additional Work being conducted in accordance with the AOC and SOW. The EPA may, at its discretion, give verbal approval for Work to be conducted prior to providing written approval of the Draft RI/FS WP Refinement/Modification Notice.

26. Subject to the provisions in Section X of the AOC, the Respondents shall prepare and submit to the EPA a final RI/FS Work Plan within sixty (60) calendar days after completing discussion of EPA's comments on the draft RI/FS Work Plan (and in no event later than ninety (90) calendar days after receipt of the EPA's comments on the draft RI/FS Work Plan).

Task 3: RI/FS Sampling and Analysis Plan

27. The Respondents shall prepare and submit to the EPA a Draft RI/FS Sampling and Analysis Plan (SAP) within sixty (60) calendar days after the Scoping Phase Meeting or conference call. This Draft RI/FS SAP shall provide a mechanism for planning field activities and shall consist of an RI/FS Field Sampling Plan and Quality Assurance Project Plan as follows:

a) The RI/FS Field Sampling Plan (FSP) shall define in detail the sampling and data gathering methods that will be used for the project to define the nature and extent of contamination and risk assessment-related studies (Task 7, Risk Assessments). It shall include, but not be limited to, sampling objectives, sample location and frequency, sampling equipment and procedures, and sample handling and analysis. The RI/FS FSP shall contain a completed Sample Design Collection Worksheet and a Method Selection Worksheet. These worksheet templates can be found in the EPA's guidance document entitled, "Guidance for Data Useability

in Risk Assessment" (EPA 1992a). In addition, the FSP shall include a comprehensive description of the Site including geology; location; and physiographic, hydrological, ecological, cultural, and natural resource features; a brief synopsis of the history of AOI-1; summary of existing data; and information on fate and transport and effects of chemicals. As such, the Respondents shall provide a strategy that includes both biased sampling and random sampling. The risk assessments require that the sampling be conducted to demonstrate that data is statistically representative of AOI-1. The Respondents shall also confirm that the detection limits for all laboratories that are used are in accordance within the goals stated in the EPA's risk assessment guidance.

The FSP shall consider the use of all existing data and shall justify the need for additional data whenever existing data will meet the same objective. Existing data, if used for the RI/FS, shall meet the data quality and usability requirements based on the data quality objectives for AOI-1. The FSP shall be written so that a field sampling team unfamiliar with AOI-1 would be able to gather the samples and field information required. The Respondents shall refer to EPA's guidance document entitled, "Interim Final Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA" (EPA 1988b) which describes the suggested RI/FS FSP format and content. The Respondents shall document any required changes to the Final FSP, during the implementation of the RI/FS, in the aforementioned RI/FS Work Plan Refinement/Modification Notices.

b) The RI/FS Quality Assurance Project Plan (QAPP) shall describe the project objectives and organization, functional activities, and quality assurance and quality control (QA/QC) protocols that will be used to achieve the desired Data Quality Objectives (DQOs). The DQOs shall at a minimum reflect use of analytical methods for identifying contamination and remediating contamination consistent with the levels for remedial action objectives identified in the NCP. In addition, the RI/FS QAPP shall address sampling procedures; sample custody; analytical procedures; data reduction, validation, and reporting; and personnel qualifications. The Respondents shall refer to the EPA's guidance documents entitled; "EPA Requirements for Quality Assurance Project Plans, EPA QA/R-5 " (EPA 2001, EPA/240/B-01/003, March 2001, or the latest revision), and "Guidance for Quality Assurance Project Plans, EPA QA/G-5 " (EPA 2002, EPA/240/R-02/009, December 2002, or the latest revision) which describe the suggested RI/FS QAPP format and content.

Subject to the provisions in Section X of the AOC, the Respondents shall prepare and submit to the EPA a final RI/FS SAP within sixty (60) calendar days after completing discussion of EPA's comments on the draft RI/FS SAP (and in no event later than ninety (90) calendar days after receipt of the EPA's comments on the draft RI/FS SAP).

28. The Respondents shall demonstrate in advance, to the EPA's satisfaction, that each analytical laboratory it may use is qualified to conduct the proposed Work. This includes use of methods and analytical protocols for the chemicals of concern in the media of interest within detection and quantification limits consistent with both QA/QC procedures and the DQOs approved in the RI/FS QAPP for the Site by the EPA. The laboratory must have, and follow, an approved QA program. If a laboratory not in the Contract Laboratory Program (CLP) is selected, methods consistent with CLP methods shall be

used where appropriate. Any methods not consistent with CLP methods shall be approved by the EPA prior to their use. Furthermore, if a laboratory not in the CLP program is selected, a laboratory QA program must be submitted to the EPA for review and approval. The EPA may require the Respondents to submit detailed information to demonstrate that the laboratory is qualified to conduct the Work, including information on personnel and qualifications, equipment, and material specifications.

Task 4: RI/FS Health and Safety Plan

29. The Respondents shall prepare and submit to the EPA an RI/FS Health and Safety Plan (HSP) within sixty (60) calendar days after the Scoping Phase Meeting or conference call. This RI/FS HSP shall be prepared in accordance with the Occupational Safety and Health Administration regulations and protocols and must be in place prior to any onsite activities. The EPA will review, but not approve, the RI/FS HSP to ensure that all necessary elements are included and that the plan provides for the protection of human health and the environment. The EPA may, at its discretion, disapprove the RI/FS HSP and provide comments concerning those aspects of the plan which pertain to the protection of the environment and the health of persons not employed by, or under contract to, the Respondents. In addition, EPA may require a revised RI/FS HSP to be submitted for review in the event that the RI/FS WP is changed or amended (e.g., such as in the performance of pilot studies which may result in the airborne emissions of hazardous substances from AOI-1). The Respondents shall refer to the EPA's guidance document entitled, "Interim Final Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA" (EPA 1988b) which describes the suggested RI/FS HSP format and content.

Task 5: Community Involvement Plan

30. The development and implementation of community relations activities, including community interviews and developing a community involvement plan, are the responsibilities of EPA. Respondents must assist, as required by EPA, by providing information regarding AOI-1's history, participating in public meetings upon notice from EPA, or by preparing fact sheets for distribution to the general public. EPA will provide Respondents with the opportunity to review and provide comments on a draft community involvement plan, including the stakeholder and community mailing lists, and fact sheets prior to distribution. The extent of Respondents' involvement in community relations activities is left to the discretion of EPA. Respondents' community relations responsibilities, if any, are specified in the community involvement plan. All community relations activities will be subject to oversight by EPA.

Task 6: Site Characterization

31. As part of the Remedial Investigation (RI), the Respondents shall perform the activities described in this Task, including the preparation of an RI Report (Task 9, Remedial Investigation Report). The overall objective of AOI-1's characterization will be to describe areas of AOI-1 that may pose a threat to human health or the environment. This will be accomplished by first determining AOI-1's physiography, geology, and hydrology. Surface and subsurface pathways of migration shall be defined by the Respondents. The Respondents shall identify the sources of contamination and define the nature, extent, and volume of the sources of contamination, including their physical and chemical constituents. The Respondents shall also investigate the extent of migration of this contamination as well as its volume and any changes in its physical or chemical characteristics, to provide for a comprehensive understanding of the nature and extent of contamination at AOI-1. Using this information, contaminant fate and transport will then be determined and projected.

32. The Respondents shall implement the Final RI/FS WP, and SAP during this phase of the RI/FS. Field data will be collected and analyzed to provide the information required to accomplish the objectives of the study. The Respondents shall notify the EPA at least fifteen (15) calendar days in advance of the field work regarding the planned dates for field activities, including, but not limited to, ecological field surveys, field layout of the sampling grid, installation of wells, initiating sampling (air, surface water, ground water, sediments, soils, and biota, if applicable), installation and calibration of equipment, aquifer tests, and initiation of analysis and other field investigation activities (including geophysical surveys and borehole geophysics). The Respondents shall not proceed with field activities without prior EPA approval. The Respondents shall demonstrate that the laboratory and type of laboratory analyses that will be utilized during AOI-1's characterization meets the specific QA/QC requirements and the DQOs established for the investigation of the Site as specified in the Final RI/FS SAP. Activities are often iterative, and to satisfy the objectives of the RI/FS it may be necessary for the Respondents to supplement the Work specified in the Final RI/FS WP.

33. The Respondents shall perform the following activities as part of Task 6 (AOI-1 Characterization):

a) Field Investigation - The field investigation shall include the gathering of data to define AOI-1's physical and biological characteristics, sources of contamination, and the nature and extent of contamination at or from AOI-1. These activities shall be performed by the Respondents in accordance with the Final RI/FS WP and SAP. At a minimum, this field investigation shall address the following:

i) Implementation and Documentation of Field Support Activities - The Respondents shall initiate field support activities following the Final RI/FS WP and SAP approved by the EPA. Field support activities may include obtaining access to AOI-1; scheduling; and procurement of equipment, office space, laboratory services, and/or contractors. The Respondents shall notify the EPA at least fifteen (15) calendar days prior to initiating field support activities so that the EPA may adequately schedule oversight activities. The Respondents shall also notify the EPA in writing upon completion of field support activities.

ii) Investigation and Definition of Site Physical and Biological Characteristics - The Respondents shall collect data on the physical and biological characteristics of AOI-1 and its surrounding areas including the physiography, geology, hydrology, and specific physical characteristics identified in the Final RI/FS WP. This information shall be ascertained through a combination of physical measurements, observations, and sampling efforts, and will be utilized to define potential transport pathways and human and ecological receptor populations (including risks to endangered or threatened species). In defining AOI-1's physical characteristics, the Respondents shall also obtain sufficient engineering data for the projection of contaminant fate and transport, and development and screening of remedial action alternatives, including information to assess treatment technologies.

iii) Definition of Sources of Contamination - The Respondents shall attempt to locate each source of contamination as agreed upon in the RI/FS Work Plan. The physical characteristics and chemical constituents and their concentrations will be determined for all known and discovered sources of contamination. The Respondents shall conduct sufficient sampling to define the boundaries of the contaminant sources to the level established in the Final RI/FS QAPP and DQOs. Defining the source of contamination shall include analyzing the potential for contaminant release (e.g., long-term leaching from soil), contaminant mobility and persistence, and characteristics important for evaluating remedial actions, including information to assess treatment technologies.

iv) Description of the Nature and Extent of Contamination - The Respondents shall gather information to describe the nature and extent of contamination, at or from AOI-1, as a final step during the field investigation. To describe the nature and extent of contamination, the Respondents shall utilize the information on AOI-1's physical and biological characteristics and sources of contamination to give a preliminary estimate of the contaminants that may have migrated. The Respondents shall then implement an iterative monitoring program and any study program identified in the Final RI/FS WP or SAP such that by using analytical techniques sufficient to detect and quantify the concentration of contaminants, the migration of contaminants through the various media at AOI-1 can be determined. In addition, the Respondents shall gather data for calculations of contaminant fate and transport. This process shall be continued until the area and depth of contamination are known to the level of contamination established in the Final RI/FS QAPP and DQOs. Respondents and EPA will use the information on the nature and extent of contamination to determine the level of risk presented by AOI-1 and to help determine appropriate remedial action alternatives to be evaluated.

b) Data Analyses - The Respondents shall analyze the data collected and develop or refine the Conceptual Site Model by presenting and analyzing data on source characteristics, the nature and extent of contamination, the transport pathways and fate of the contaminants present at AOI-1, and the effects on human health and the environment:

i) Evaluation of AOI-1 Characteristics: The Respondents shall analyze and evaluate the data to describe AOI-1's physical and biological characteristics, contaminant source characteristics (as necessary to identify principal threat or low threat wastes, and estimate waste volumes for risk assessment evaluation and remedial alternatives evaluation purposes), nature and extent of contamination, and contaminant fate and transport. Results of AOI-1's physical characteristics, source characteristics, and extent of contamination analyses are utilized in the analysis of contaminant fate and transport. The evaluation will include the estimated and/or actual releases from the sources, and horizontal and vertical spread of contamination as well as the mobility and persistence of the contaminants. Where modeling is appropriate, such models shall be identified by the Respondents to the EPA in a Technical Memorandum prior to their use. If EPA disapproves of or requires revisions to the technical memorandum, in whole or in part, subject to the provisions in Section X of the AOC, Respondents shall amend and submit to EPA a revised technical memorandum on modeling which is responsive to directions

and EPA's comments within sixty (60) calendar days after completing discussion of the EPA's comments on the draft technical memorandum (and in no event later than ninety (90) calendar days after receipt of the EPA's comments on the draft memorandum).

All data and programming, including any proprietary programs, shall be made available to the EPA together with a sensitivity analysis. The RI data shall be presented in a format to facilitate the Respondent's preparation of the Baseline Human Health and Ecological Risk Assessments (Task 7, Risk Assessments). All data shall be archived in a database in such a format that would be accessible to investigators as needed.

The Respondents shall agree to discuss, develop an appropriate scope, and then collect additional data for data gaps identified by the EPA that are needed to complete the risk assessments. Also, this evaluation shall provide any information relevant to AOI-1's characteristics necessary for evaluation of the need for remedial action in the risk assessments and for the development and evaluation of remedial alternatives. Analyses of data collected for AOI-1's characterization shall meet the DQOs developed in the Final RI/FS QAPP and stated in the Final RI/FS SAP (or revised during the RI).

c) Data Management Procedures – The Respondents shall consistently document the quality and validity of field and laboratory data compiled during the RI as follows:

i) Documentation of Field Activities - Information gathered during AOI-1's characterization shall be consistently documented and adequately recorded by the Respondents in well maintained field logs and laboratory reports. The method(s) of documentation shall be specified in the Final RI/FS WP and/or the SAP. Field logs shall be utilized to document observations, measurements, and significant events that have occurred during field activities. Laboratory reports shall document sample custody, analytical responsibility and results, adherence to prescribed protocols, nonconformity events, corrective measures, and data deficiencies.

ii) Sample Management and Tracking - The Respondents shall maintain field reports, sample shipment records, analytical results, and QA/QC reports to ensure that only validated analytical data are reported and utilized in the risk assessments and the development and evaluation of remedial alternatives. Analytical results developed under the Final RI/FS WP shall not be included in any characterization reports of AOI-1 unless accompanied by or cross-referenced to a corresponding QA/QC report. In addition, the Respondents shall establish a data security system to safeguard chain-of-custody forms and other project records to prevent loss, damage, or alteration of project documentation.

34. Reuse Assessment - If EPA, in its sole discretion, determines that a Reuse Assessment is necessary, Respondents will perform the Reuse Assessment in accordance with the SOW, RI/FS Work Plan and applicable guidance (EPA 2001c). The Reuse Assessment should provide sufficient information to develop realistic assumptions of the reasonably anticipated future land use for AOI-1.

Task 7: Risk Assessments

35. The Respondents shall perform a Baseline Human Health Risk Assessment, Screening Level Ecological Risk Assessment, and a Baseline Ecological Risk Assessment (if necessary) for the Site, which will be a part of the RI Report. The Respondents will prepare one section of the Final RI/FS WP (Task 2) which discusses the risk assessment process and outlines the steps necessary for coordinating with the EPA at key decision points within the process. Submittal of deliverables, meetings and/or conference calls, and presentations to the EPA will be reflected in the project schedule in the Final RI/FS WP to demonstrate the progress made on the risk assessments. The DQOs listed within the Final RI/FS QAPP will include DQOs specific to risk assessment needs, and critical samples needed for the risk assessments will be identified within the Final RI/FS SAP. The Respondents shall develop an initial Conceptual Site Model which may be revised as new information is obtained. These risk assessments shall consist of both Human Health and Ecological Risk Assessments as follows:

a) Baseline Human Health Risk Assessment: The Respondents shall perform a Baseline Human Health Risk Assessment (BHHRA) to evaluate and assess the risk to human health posed by the contaminants present at AOI-1. The Respondents shall refer to the appropriate EPA guidance documents (EPA 1989b, 1991a, 1991b, 1991c, 1992a, and 2001b) in conducting the BHHRA. The Respondents shall address the following in the BHHRA:

i) Hazard Identification (sources) - The Respondents shall review available information on the hazardous substances present at AOI-1 and identify the major contaminants of concern.

ii) Dose-Response Assessment - The Respondents, with concurrence from the EPA, shall select contaminants of concern based on their intrinsic toxicological properties and distribution in the environment.

iii) Conceptual Exposure/Pathway Analysis - The Respondents shall identify and analyze critical exposure pathways (e.g., drinking water). The proximity of contaminants to exposure pathways and their potential to migrate into critical exposure pathways shall be assessed.

iv) Characterization of AOI-1 and Potential Receptors - The Respondents shall identify and characterize human populations in the exposure pathways.

v) Exposure Assessment - During the exposure assessment, the Respondents shall identify the magnitude of actual or potential human exposures, the frequency and duration of these exposures, and the routes by which receptors are exposed. The exposure assessment shall include an evaluation of the likelihood of such exposures occurring and shall provide the basis for the development of acceptable exposure levels. In developing the exposure assessment, the Respondents shall develop reasonable maximum estimates of exposure for both current land use conditions and potential future land use conditions at AOI-1.

vi) Risk Characterization - During risk characterization, the Respondents shall compare

chemical-specific toxicity information, combined with quantitative and qualitative information from the exposure assessment, to measured levels of contaminant exposure levels and the levels predicted through environmental fate and transport modeling. These comparisons shall determine whether concentrations of contaminants at or near AOI-1 are affecting or could potentially affect human health.

vii) Identification of Limitations/Uncertainties - The Respondents shall identify critical assumptions (e.g., background concentrations and conditions) and uncertainties in the BHHRA.

viii) Conceptual Site Model - Based on contaminant identification, exposure assessment, toxicity assessment, and risk characterization, the Respondents shall develop a Conceptual Site Model for AOI-1.

The Respondents shall prepare and submit to the EPA for review and approval, according to the schedule specified in the Final RI/FS Work Plan, a Draft BHHRA. Subject to the provisions in Section X of the AOC, the Respondents shall submit a revised BHHRA within sixty (60) calendar days after completing discussion of the EPA's comments on the Draft BHHRA (an in no event later than ninety(90) calendar days after receipt of the EPA's approval of the Draft BHHRA.

b) Baseline Ecological Risk Assessment: The Respondents shall perform the Baseline Ecological Risk Assessment (BERA) (if necessary) concurrently with the BHHRA. The BERA shall conform to current EPA guidance (EPA 1992a, EPA 1992b, EPA 1993, EPA 1997, and EPA 2001b). The scoping of all phases of the BERA shall follow the general approach provided in the EPA's guidance (EPA 1997) and shall include discussions between the Respondents and the EPA's risk assessors and risk managers. The BERA shall conform to the general outline provided in the EPA's guidance (EPA 1997).

The eight steps in the Baseline Ecological Risk Assessment (BERA) process include:
Step 1 - Screening-Level Problem Formulation and Ecological Effects Evaluation,
Step 2 - Screening-Level Preliminary Exposure Estimate and Risk Calculation,
Step 3 - Baseline Risk Assessment Problem Formulation,
Step 4 - Study Design and Data Quality Objectives,
Step 5 - Field Verification and Sampling Design,
Step 6 - Site Investigation and Analysis of Exposure and Effects,
Step 7 - Risk Characterization, and
Step 8 - Risk Management.

The Respondents shall interact closely with the EPA's Remedial Project Manager and risk assessment staff assigned to AOI-1 to ensure that draft deliverables are acceptable and major rework is avoided on subsequent submittals. The scope of the BERA will be determined via a phased approach as outlined in the EPA's guidance documents and documented in the following deliverables:

i) Step 1, Screening Level Problem Formulation and Ecological Effects Evaluation - The "Screening Level Problem Formulation and Ecological Effects Evaluation" step is part of the initial ecological risk screening assessment. For this initial step, it is likely that site-specific information for determining the nature and extent of contamination and for characterizing ecological receptors at AOI-1 is limited. This step includes all the functions of problem formulation (Steps 3 and 4) and ecological effects analysis, but on a screening level. The results of this step will be used in conjunction with exposure estimates during the preliminary risk calculation in Step 2 (Screening-Level Preliminary Exposure Estimate and Risk Calculation).

For the screening level problem formulation, the Respondents shall develop a Conceptual Site Model that addresses these five issues: 1) environmental setting and sources of COPCs known or suspected to exist at AOI-1, 2) contaminant fate and transport mechanisms that might exist at AOI-1, 3) if appropriate the mechanisms of ecotoxicity associated with contaminants and likely categories of receptors that could be affected, 4) the complete exposure pathways that might exist at AOI-1, and 5) selection of endpoints to screen for ecological risk.

The next step in the initial ecological risk screening assessment will be the preliminary ecological effects evaluation and the establishment of contaminant exposure levels that represent conservative thresholds for adverse ecological effects. Screening ecotoxicity values shall represent a no-observed-adverse-effect-level for long-term exposures to a contaminant. Ecological effects of most concern are those that can impact populations (or higher levels of biological organizations), and/or individual receptors for state and federally listed threatened/endangered or rare species; and include adverse effects on development, reproduction, and survivorship. For some of the data reported in the literature, conversions may be necessary to allow the data to be used for measures of exposure other than those reported. The Respondents shall consult with the EPA's Remedial Project Manager and risk assessors concerning any extrapolations used in developing screening ecotoxicity values.

ii) Step 2, Screening-Level Exposure Estimate and Risk Calculation - The "Screening-Level Exposure Estimate and Risk Calculation" comprises the second step in the ecological risk screening assessment for AOI-1. Risk is estimated by comparing maximum documented exposure concentrations with the ecotoxicity screening values from Step 1. At the conclusion of Step 2, the Respondents shall decide, with concurrence from the EPA, that either the screening-level ecological risk assessment is adequate to determine that ecological threats are negligible, or available information is adequate to support a risk management decision, such as continuing to a more detailed ecological risk assessment (Steps 3 through 7). If the process continues, the screening-level assessment serves to identify exposure pathways and preliminary contaminants of concern for the BERA by eliminating those contaminants and exposure pathways that pose negligible risks.

To estimate exposures for the screening-level ecological risk calculation, AOI-1

contaminant levels and general information on the types of biological receptors that might be exposed should be known from Step 1. Complete exposure pathways will be evaluated and reasonable exposure values (as agreed to between EPA and Respondents) will be used for each environmental medium to estimate exposures. Potentially complete exposure pathways may require evaluation or may be evaluated using alternate methods. The need for additional evaluation of potentially complete pathways will be established based on discussions between EPA and Respondents.

The Respondents will estimate a quantitative screening-level risk using the exposure estimates developed according to Step 2 and the screening ecotoxicity values developed according to Step 1. For the screening-level risk calculation, the hazard quotient approach, which compares point estimates of screening ecotoxicity values and exposure values, is adequate to estimate risk.

At the end of Step 2, the Respondents shall decide, with concurrence from the EPA, whether the information available is adequate to support a risk management decision. The three possible decisions at this point will be: 1) There is adequate information to conclude that ecological risks are negligible and therefore no need for remediation on the basis of ecological risk; 2) The information is not adequate to make a decision at this point, and the ecological risk assessment process will continue to Step 3; or 3) The information indicates a potential for adverse ecological effects, and a more thorough assessment is warranted. The Respondents shall document the decision and the basis for it in a Draft Screening Level Ecological Risk Assessment (SLERA) Report and submit it to the EPA for review and approval according to the project schedule in the Final RI/FS WP. The Respondents shall submit a revised SLERA within sixty (60) days after completing discussion of the EPA's comments on the Draft SLERA Report (and in no event later than ninety (90) days after receipt of the EPA's comments on the Draft SLERA Report).

iii) Step 3, Baseline Risk Assessment Problem Formulation - The "Baseline Risk Assessment Problem Formulation" step of the BERA will refine the screening-level problem formulation and expands on the ecological issues that are of concern at AOI-1. In the screening-level assessment, conservative assumptions are used where site-specific information is lacking. In Step 3, the results of the screening assessment and additional site-specific information are used to determine the scope and goals of the BERA. Steps 3 through 7 will be required only if the screening-level assessment, in Steps 1 and 2, indicated a need for further ecological risk evaluation.

Problem formulation at Step 3 will include the following activities: a) refining preliminary contaminants of ecological concern; b) further characterizing ecological effects of contaminants; c) reviewing and refining information on contaminant fate and transport, complete exposure pathways, and ecosystems potentially at risk; d) selecting assessment endpoints; and e) developing a CSM with working hypotheses or questions that the Site investigation will address.

At the conclusion of Step 3, if needed, the Respondents shall submit a Draft BERA Problem Formulation (PF) Report to the EPA for review and approval according to the project schedule in the Final RI/FS Work Plan. The Respondents shall submit a revised BERA PF Report within sixty (60) days after completing discussion of the EPA's comments on the Draft BERA PF Report (and in no event later than ninety (90) days after receipt of the EPA's comments on the Draft BERA PF Report). This report shall discuss the assessment endpoints, exposure pathways, risk questions, and the CSM integrating these components. The products of Step 3 will be used to select measurement endpoints and to develop the BERA Work Plan (WP) and Sampling and Analysis (SAP) for AOI-1 in Step 4.

iv) Step 4, Study Design and Data Quality Objective Process - The "Study Design and Data Quality Objective Process" step of the BERA will establish the measurement endpoints which complete the CSM in Step 3. The CSM will then be used to develop the study design and DQOs. The deliverables of Step 4 will be the BERA WP and SAP, which describe the details of AOI-1's investigation as well as the data analysis methods and DQOs. The Draft BERA WP shall describe the assessment endpoints, exposure pathways, questions and testable hypotheses, measurement endpoints and their relation to assessment endpoints, and uncertainties and assumptions. The Draft BERA SAP shall describe data needs; scientifically valid and sufficient study design and data analysis procedures; study methodology and protocols, including sampling techniques; data reduction and interpretation techniques, including statistical analyses; and quality assurance procedures and quality control techniques. The Respondents shall submit to the EPA for review and approval a Draft BERA WP and SAP according to the schedule specified in the Final RI/FS Work Plan. The Respondents shall submit a Revised BERA WP and SAP within sixty (60) days after completing discussion of the EPA's comments on the Draft BERA WP and SAP (and in no event later than ninety (90) days after receipt of the EPA's comments on the Draft BERA WP and SAP).

v) Step 5, Field Verification of Sampling Design - The "Field Verification of Sampling Design" step of the BERA process will ensure that the DQOs for AOI-1 can be met. This step verifies that the selected assessment endpoints, testable hypotheses, exposure pathway model, measurement endpoints, and study design from Steps 3 and 4 are appropriate and implementable at the Site. Step 6 of the BERA process cannot begin until the Final BERA WP and SAP are approved by the EPA.

vi) Step 6, Site Investigation and Analysis Phase - The "Site Investigation and Analysis Phase" of the BERA process shall follow the Final BERA WP and SAP developed in Step 4 and verified in Step 5. The Step 6 results are then used to characterize ecological risks in Step 7.

The Final BERA WP for AOI-1 investigation will be based on the CSM and will specify the assessment endpoints, risk questions, and testable hypotheses. During AOI-1 investigation, the Respondents shall adhere to the DQOs and to any requirements for co-located sampling. The analysis phase of the BERA process will consist of the technical

evaluation of data on existing and potential exposures and ecological effects at AOI-1. This analysis will be based on the information collected during Steps 1 through 5 and will include additional assumptions or models to interpret the data in the context of the CSM. Changing field conditions and new information on the nature and extent of contamination may require a change to the Final BERA SAP.

vii) Step 7 - Risk Characterization - The "Risk Characterization" step is considered the final phase of the BERA process and will include two major components: risk estimation and risk description. Risk estimation will consist of integrating the exposure profiles with the exposure-effects information and summarizing the associated uncertainties. The risk description will provide information important for interpreting the risk results and will identify a threshold for adverse effects on the assessment endpoints. At the end of Step 7, the Respondents shall submit a Draft BERA Report to EPA for review and approval according to the project schedule in the Final RI/FS WP. The Respondents shall submit a revised BERA Report within sixty (60) days after completing discussion of the EPA's comments on the Draft BERA Report (and in no event later than ninety (90) days after receipt of the EPA's comments on the Draft BERA Report).

viii) Step 8 - Risk Management - "Risk Management" at the Site will be the responsibility of the EPA's Remedial Project Manager and risk assessor(s), who must balance risk reductions associated with cleanup of contaminants with potential impacts of the remedial actions themselves. In Step 7, a threshold for effects on the assessment endpoint as a range between contamination levels identified as posing no ecological risk and the lowest contamination levels identified as likely to produce adverse ecological effects will be identified. In Step 8, the EPA's Remedial Project Manager and risk assessor(s) will evaluate several factors in deciding whether or not to clean up to within that range. This risk management decision will be finalized by the EPA in the Record of Decision for the Site based on the nine criteria.

Task 8: Treatability Studies

36. Treatability testing, if necessary and if treatability testing is applicable for an identified alternative, shall be performed by the Respondents to assist in the detailed analysis of alternatives. In addition, if applicable, testing results and operating conditions shall be used in the detailed design of the selected remedial technology. The following activities shall be performed by the Respondents:

a) Determination of Candidate Technologies and of the Need for Testing - The Respondents shall identify candidate technologies for a treatability studies program.

The listing of candidate technologies will cover the range of technologies required for alternatives analysis. The specific data requirements for the testing program will be determined and refined during the characterization of the Site and the development and screening of remedial alternatives. The Respondents shall perform the following activities:

i) Conduct of Literature Survey and Determination of the Need for Treatability Testing - The Respondents shall conduct a literature survey to gather information on performance, relative costs, applicability, removal efficiencies, operation and maintenance

requirements, and implementability of candidate technologies. If practical technologies have not been sufficiently demonstrated, or cannot be adequately evaluated for this Site on the basis of available information, treatability testing may need to be conducted. Where it is determined by the EPA that treatability testing is required, and unless the Respondents can demonstrate to the EPA's satisfaction that they are not needed, the Respondents shall be required to submit a Treatability Study Work Plan to the EPA outlining the steps and data necessary to evaluate and initiate the treatability testing program.

ii) Evaluation of Treatability Studies - Once a decision has been made to perform treatability studies, the Respondents and the EPA will decide on the type of treatability testing to use (e.g., bench versus pilot, etc.). Because of the time required to design, fabricate, and install pilot scale equipment as well as perform testing for various operating conditions, the decision to perform pilot testing shall be made as early in the process as possible to minimize potential delays of the Feasibility Study (Task 10). If the EPA determines that treatability studies are necessary, the Respondents shall submit a Draft Treatability Study Work Plan (TSWP), Sampling and Analysis Plan (SAP), and Health and Safety Plan within sixty (60) calendar days after the determination that treatability studies are necessary. Subject to the provisions in Section X of the AOC, the Respondents shall submit a revised TSWP, SAP, and HSP within sixty (60) days after completing discussion of the EPA's comments on the Draft TSWP (and in no event later than ninety (90) calendar days after receipt of the EPA's comments on the Draft TSWP. The EPA will not approve the TS HSP but may provide comments to the Respondents.

The Respondents shall submit a Draft Treatability Study (TS) Report to the EPA for review and approval according to the project schedule in the Final Treatability Study Work Plan. Subject to the provisions in Section X of the AOC, the Respondents shall submit a revised TS Report within sixty (60) calendar days after completing discussion of the EPA's comments on the Draft TS Report (and in no event later than ninety (90) calendar days after receipt of the EPA's comments of the Draft TS Report. This report shall evaluate the technology's effectiveness and implementability in relation to the Preliminary Remediation Goals established for the Site. Actual results must be compared with predicted results to justify effectiveness and implementability discussions.

Task 9: Remedial Investigation Report

37. The Respondents shall prepare and submit a Remedial Investigation (RI) Report. The Respondents shall refer to the EPA's guidance document entitled, "Interim Final Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA" (EPA 1988b), including Table 3-13 (Suggested RI Report Format), for the suggested RI Report format and content. The Respondents shall discuss the RI Report format and content with the EPA's Remedial Project Manager early in the RI/FS process. The information shall include a summary of the results of the field activities to characterize AOI-1, classification of ground water beneath AOI-1, nature and extent of contamination for all media, and appropriate site-specific discussions for fate and transport of contaminants. The Respondents shall incorporate the results of Task 7 (Risk Assessments) into the RI Report, as appropriate.

The Respondents shall submit a Draft RI Report to the EPA for review and approval according to

the project schedule in the Final RI/FS Work Plan. Subject to the provisions in Section X of the AOC, the Respondents shall submit a revised RI Report within sixty (60) calendar days after completing discussion of the EPA's comments on the Draft RI Report (and in no event later than ninety (90) calendar days after receipt of the EPA's comments on the Draft RI Report).

Task 10: Feasibility Study

38. The Respondents shall perform a Feasibility Study (FS) as specified in this SOW. The FS shall include, but not be limited to, the development and screening of alternatives for remedial action, a detailed analysis of alternatives for remedial action, and submittal of Draft and Final FS Reports as follows:

a) Development and Screening of Alternatives for Remedial Action - The Respondents shall develop an appropriate range of remedial alternatives that will be evaluated through development and screening.

b) Detailed Analyses of Alternatives for Remedial Action - The Respondents shall conduct a detailed analysis of remedial alternatives (including no action) for the candidate remedies identified during the screening process described in this Task. This detailed analysis shall follow the EPA's guidance document entitled, "Interim Final Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA" (EPA 1988b) and other appropriate guidance documents. The major components of the Detailed Analysis of Alternatives for Remedial Action shall consist of an analysis of each option against a set of nine evaluation criteria taking sustainability into account and a separate discussion for the comparative analysis of all options with respect to each other in a manner consistent with the NCP. The Respondents shall not consider state and community acceptance during the Detailed Analysis of Alternatives. The EPA will perform the analysis of these two criteria. At the conclusion of the Detailed Analysis of Alternatives and within the time frame specified in the project schedule in the Final RI/FS WP, the Respondents shall provide the EPA with a Draft FS Report as outlined below.

Draft Feasibility Study Report - The Respondents shall submit to the EPA, for review and approval, a Draft FS Report which documents the activities conducted during the Development and Screening of Alternatives and the Detailed Analyses of Alternatives, as described above, according to the project schedule in the Final RI/FS WP. The Respondents shall refer to the EPA's guidance document entitled, "Interim Final Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA" (EPA 1988b), specifically Table 6-5 (Suggested FS Report Format) for suggested FS Report content and format.

c) Final Feasibility Study Report – The Draft FS Report shall provide the basis for the Proposed Plan developed by the EPA under CERCLA and shall document the development and analysis of remedial alternatives. The Draft FS Report may be subject to change following comments received during the public comment period on the EPA's Proposed Plan. The EPA will forward any comments pertinent to content of the Draft FS Report to the Respondents. Subject to the provisions in Section X of the AOC, the Respondents shall submit a revised FS Report within sixty (60) calendar days after completing discussion of the EPA's comments (and any public comments provided by EPA) on the Draft FS Report (and in no event later than ninety (90) calendar days after the receipt of comments from EPA on the Draft FS Report).

**APPENDIX A**
**SCHEDULE OF DELIVERABLES/MEETINGS**
**STATEMENT OF WORK**
**REMEDIAL INVESTIGATION AND FEASIBILITY STUDY**
**U.S. OIL RECOVERY SUPERFUND SITE – AREA OF INVESTIGATION-1**

| DELIVERABLE | DUE DATE (CALENDAR DAYS) |
|---|---|
| 1. Scoping Phase Meeting | Meeting or conference call to be scheduled within fourteen (14) days after the effective date of the AOC. |
| 2. Draft and Final RI/FS Work Plan (WP) | Draft due within sixty (60) days after the Scoping Phase Meeting or conference call. Final due within sixty (60) days after completing discussion of the EPA's comments on the Draft RI/FS Work Plan (and in no event later than ninety (90) days after receipt of the EPA's comments on the Draft RI/FS Work Plan) |
| 3. Draft and Final RI/FS Sampling and Analysis Plan (SAP) | Draft due within sixty (60) days after the Scoping Phase Meeting or conference call. Final due within sixty (60) days after completing discussion of the EPA's comments on the Draft RI/FS SAP (and in no event later than ninety (90) days after receipt of the EPA's comments on the Draft RI/FS Work SAP) |
| 4. RI/FS Site Health and Safety Plan | Plan due within sixty (60) days after the Scoping Phase Meeting or conference call. |
| 5. Draft and Final Technical Memorandum on Modeling of Site Characteristics | Draft due when Respondents propose that modeling is appropriate. Revised due within sixty (60) days after completing discussion of the EPA's comments on the draft memorandum (and in no event later than ninety (90) days after receipt of the EPA's comments on the draft memorandum). |
| 6. Draft and Final Baseline Human Health Risk Assessment (BHHRA) | Draft due as specified in the Final RI/FS WP. Revision due within sixty (60) days after completing discussion of the EPA's comments on the Draft BHHRA (and in no event later than ninety (90) days after receipt of the EPA's comments on the Draft BHHRA). |
| 7. Draft and Final Screening Level Ecological Risk Assessment (SLERA) Report | Draft due as specified in the Final RI/FS WP. Revision due within sixty (60) days after completing discussion of the EPA's comments on the Draft SLERA Report (and in no event later than ninety (90) days after receipt of the EPA's comments on the Draft SLERA Report). |
| 8. Draft and Final Baseline Ecological Risk Assessment (BERA) Problem Formulation (PF) Report | Draft due as specified in the Final RI/FS WP. Revised due within sixty (60) days after completing discussion of the EPA's comments on the Draft BERA PF Report (and in no event later than ninety (90) days after receipt of the EPA's comments on the Draft BERA PF Report). |

**APPENDIX A (CONTD.)**
**SCHEDULE OF DELIVERABLES/MEETINGS**
**STATEMENT OF WORK**
**REMEDIAL INVESTIGATION AND FEASIBILITY STUDY**
**U.S. OIL RECOVERY SUPERFUND SITE**

| DELIVERABLES/MEETINGS | DUE DATES (CALENDAR DAYS) |
|---|---|
| 9. Draft and Final Baseline Ecological Risk Assessment (BERA) Work Plan (WP) and Sampling and Analysis Plan (SAP) | Draft due as specified in the Final RI/FS WP. Revision due within sixty (60) days after completing discussion of the EPA's comments on the Draft BERA WP and SAP (and in no event later than ninety (90) days after receipt of the EPA's comments on the Draft BERA WP and SAP). |
| 10. Draft and Final Baseline Ecological Risk Assessment (BERA) Report | Draft due as specified in the Final RI/FS WP. Revision due within sixty (60) days after completing discussion of the EPA's comments on the Draft BERA Report (and in no event later than ninety (90) days after receipt of the EPA's comments on the Draft BERA Report). |
| 11. Draft and Final Treatability Study (TS) Work Plan (WP), Sampling and Analysis Plan (SAP), and Health and Safety Plan | Revision Draft due within ninety (90) calendar days after the determination that treatability studies are necessary for the identified alternative. Final due within sixty (60) days after completing discussion of the EPA's comments on the Draft TSWP (and in no event later than ninety (90) days after receipt of the EPA's comments on the Draft TSWP). |
| 12. Draft and Final Treatability Study (TS) Report | Revision Draft due as specified in the Final RI/FS TSWP. Final due within sixty (60) days after completing discussion of the EPA's comments on the Draft TS Report (and in no event later than ninety (90) days after receipt of the EPA's comments on the Draft TS Report). |
| 13. Draft and Final Remedial Investigation (RI) Report | Draft due as specified in the Final RI/FS WP. Revision due within sixty (60) days after completing discussion of the EPA's comments on the Draft RI Report (and in no event later than ninety (90) days after receipt of the EPA's comments on the Draft RI Report). |
| 14. Draft and Final Feasibility Study (FS) Report | Draft due as specified in the Final RI/FS WP. Revision due within sixty (60) days after completing discussion of the EPA's comments on the Draft FS Report (and in no event later than ninety (90) days after receipt of the EPA's comments on the Draft FS Report). |
| 15. Bi-Monthly Status Reports | Initially due as specified in the Final RI/FS Work Plan. Thereafter due by the fifteenth day of every other following month. |

**APPENDIX B**
**GUIDANCE DOCUMENTS**
**REMEDIAL INVESTIGATION AND FEASIBILITY STUDY**
**U.S. OIL RECOVERY SUPERFUND SITE – AREA OF INVESTIGATION- 1**

The following list comprises some of the guidance documents that are applicable to the Remedial Investigation and Feasibility Study process. The Respondents should consult with EPA's Remedial Project Manager for additional guidance and to ensure that the following guidance documents have not been superseded by more recent guidance:

U.S. Environmental Protection Agency (EPA) 1987a. "Data Quality Objectives for Remedial Response Activities." Office of Emergency and Remedial Response and Office of Waste Programs Enforcement. EPA/540/G-87/003. OSWER Directive No. 9335.0-7b. March 1987.

EPA 1987b. "Interim Guidance on Compliance with Applicable or Relevant and Appropriate Requirements." Office of Emergency and Remedial Response. OSWER Directive No. 9234.0-05. July 9, 1987.

EPA 1988a. "CERCLA Compliance with Other Laws Manual." Office of Emergency and Remedial Response. OSWER Directive No. 9234.1-01. August 1988.

EPA 1988b. "Interim Final Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA." Office of Emergency and Remedial Response. EPA/540/G-89/004. OSWER Directive No. 9355.3-01. October 1988.

EPA 1989a. "CERCLA Compliance with Other Laws Manual: Part II. Clean Air Act and Other Environmental Statutes and State Requirements." Office of Emergency and Remedial Response. OSWER Directive No. 9234.1-02. August 1989.

EPA 1989b. "Risk Assessment Guidance for Superfund, Volume I, Human Health Evaluation Manual (Part A)." Office of Emergency and Remedial Response. EPA/540/1-89/002. OSWER Directive No. 9285.7-01A. December 1989.

EPA 1991a. "Human Health Evaluation Manual, Supplemental Guidance: Standard Default Exposure Factors." Office of Emergency and Remedial Response. OSWER Directive No. 9235.6-03. March 1991.

EPA 1991b. "Risk Assessment Guidance for Superfund: Volume I, Human Health Evaluation Manual (Part B), Development of Risk-Based Preliminary Remediating Goals." Office of Emergency and Remedial Response. OSWER Directive No. 9285.7-01B. December 1991.

EPA 1991c. "Risk Assessment Guidance for Superfund: Volume I, Human Health Evaluation Manual (Part C), Risk Evaluation of Remedial Alternatives." Office of Emergency and Remedial Response. OSWER Directive No. 9285.7-01C. 1991.

EPA 1992a. "Guidance for Data Useability in Risk Assessment." Office of Emergency and Remedial Response. OSWER Directive No. 9285.7-09A. April 1992 (and Memorandum from Henry L. Longest dated June 2, 1992).

EPA 1992b. “Supplemental Guidance to RAGS: Calculating the Concentration Term.” Office of Emergency and Remedial Response. OSWER Directive No. 9285.7-081. May 1992.

EPA 1997. “Ecological Risk Assessment Guidance for Superfund, Process for Designing and Conducting Ecological Risk Assessments.” Office of Emergency and Remedial Response. EPA/540-R-97-006. June 5, 1997.

EPA 2000. “Guidance for the Data Quality Objectives Process.” EPA QA/G-4, EPA/600/R-96/055. August 2000.

EPA 2001a. “EPA Requirements for Quality Assurance Project Plans.” Office of Environmental Information. EPA QA/R-5. EPA/240/B-01/003. March 2001.

EPA 2001b. “Risk Assessment Guidance for Superfund, Volume 1 - Human Health Evaluation Manual (Part D, Standardized Planning, Reporting, and Review of Superfund Risk Assessments). Final. Publication 9285.7-47. December 2001.

EPA 2001c. “Reuse Assessments: A Tool to Implement The Superfund Land Use Directive.” OSWER 9355.7-06P”, June 2001 available at

EPA 2002. “EPA Guidance for Quality Assurance Project Plans.” EPA QA/G-5. EPA/240/R-02/009. December 2002.

EPA 2009a. “U.S. Environmental Protection Agency Office of Solid Waste and Emergency Response Principles for Greener Cleanups” August 2009 available at http://www.epa.gov/oswer/greenercleanups/pdfs/oswer_greencleanup_principles.pdf

EPA 2009b. “EPA Region 6 Clean and Green Policy” September 2009 available at http://www.cluin.org/greenremediation/docs/R6GRPolicy.pdf

**APPENDIX C**
**APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS**
**REMEDIAL INVESTIGATION AND FEASIBILITY STUDY**
**U.S. OIL RECOVERY SUPERFUND SITE – AREA OF INVESTIGATION-1**

A preliminary list of probable Applicable or Relevant and Appropriate Requirements (ARARs) will be generated by the Respondents during the Remedial Investigation and Feasibility Study process. This list will be compiled according to established EPA guidance, research of existing regulations, and collection of site-specific information and data. Three types of ARARs will be identified:

1) Chemical-Specific ARARs: These ARARs are usually health- or risk-based numerical values or methodologies used to determine acceptable concentrations of chemicals that may be found in or discharged to the environment.

2) Location-Specific ARARs: These ARARs restrict actions or contaminant concentrations in certain environmentally sensitive areas. Examples of areas regulated under various Federal laws include floodplains, wetlands, and locations where endangered species or historically significant cultural resources are present.

3) Action-Specific ARARs: These ARARs are usually technology- or activity-based requirements or limitations on actions or conditions involving specific substances.

Chemical- and location-specific ARARs are identified early in the process, generally during the site investigation, while action-specific ARARs are usually identified during the Feasibility Study in the detailed analysis of alternatives.

# APPENDIX D

## Technical Scope of Work

## Area of Investigation 1 - USOR Property

## Remedial Investigation/Feasibility Study

## US Oil Recovery Site

## INTRODUCTION

This appendix to the Statement of Work (SOW) provides the preliminary technical Scope of Work for the Remedial Investigation/Feasibility Study (RI/FS) at Area of Investigation 1 ("AOI-1", also referred to as the "USOR Property" or "the property") at the US Oil Recovery Superfund site (the Site). The objective of the Scope of Work is to evaluate the nature and extent of contamination resulting from operations at the USOR Property, to obtain information necessary to fill data gaps in the Preliminary Conceptual Site Model (PCSM) for the USOR Property, and allow the development and evaluation of remedial action alternatives in the FS. The specific activities and procedures for implementing this RI/FS will be presented in subsequent work plans described in the SOW.

As described below, this scope of work is based upon the following analyses:

(1) Development of PCSMs for AOI-1 (human health and ecological), highlighting those potential exposure pathways and receptors for which additional data are needed to evaluate the completeness of a potential pathway and/or the significance of those pathways that are initially characterized as complete in support of the risk assessment.

(2) Design of an iterative RI characterization program and process that provides the needed data, including identification of media to be sampled, sample locations and associated analytical parameters.

(3) Identification of the data needed to complete the evaluation of potentially complete or potentially significant pathways in the PCSMs, and facilitate evaluation of potential remedial action alternatives in the FS.

Consistent with EPA's expectations as noted in Paragraph 2 of the SOW, an "iterative" approach to data collection will be used during the RI to maximize the overall investigative effectiveness and efficiency and assist in decision making. Also, consistent with the SOW and the Triad Approach, a streamlined data assessment and reporting process is proposed for the RI/FS. The iterative sampling program will start with the investigation of on-property (defined as the area inside the existing fence at the USOR Property) soil, groundwater, surface water and sediment and off-property (defined as the area outside of the existing fence at the USOR Property) soil and groundwater and proceed to off-property sediment, surface water, and other environmental media as appropriate. This iterative program will use the data collected in previous phase(s) of investigation to help focus constituents of potential concern (COPCs) and investigation areas for subsequent sampling efforts. It is believed that this approach will help minimize the likelihood of making erroneous decisions with data that are difficult to interpret, do not support the performance or acceptance criteria defined in the RI/FS Work Plan, or do not support the overall project goal of identifying potential risks associated with past AOI-1 activities.

## PRELIMINARY CONCEPTUAL SITE MODELS

PCSMs are presented for human health and ecological pathways as Figures 1 and 2, respectively. PCSMs present the current understanding of the type and occurrence of potential contaminant sources and possible exposure pathways associated with AOI-1. Consistent with EPA RI/FS Guidance (EPA, 1988), the PCSMs were developed on the basis of existing AOI-1 conditions (i.e., land use, historical process knowledge, hydrogeology, source areas, COPCs, and existing data). The hypotheses presented in the PCSMs will be tested iteratively, refined, and modified as necessary as data are collected during the RI. The following subsections discuss AOI-1 conditions and available information that are important to understanding the overall PCSMs and remaining data needs.

**Current Land Use**

The USOR Property is located at 400 North Richey Street in Pasadena, Harris County, Texas, 77506 (Figure 3). The approximately 12.2 acre property was most recently used as a used oil processing and waste treatment facility by US Oil Recovery LP USOR LP). USOR LP began operations on the property in approximately June 2003 and acquired the property in December 2003. Prior to 2004, multiple businesses operated on the property including chemical manufacturing companies (specializing in fertilizers and/or herbicides/pesticides), a cow hide exporter, leather tanner, and companies with unknown operations including storage of various hard goods. Attachment D-1 contains a more detailed listing of the operational history of the property.

The USOR Property was abandoned by its current owner and is now under the custody and control of a court-appointed receiver. An office building, security guard shack, and large warehouse (approximately 25,000 square feet in size) are present on the property. The warehouse includes a former laboratory, machine shop, parts warehouse, and a material processing area that included a filter press. Approximately 800 55-gallon drums (some in over-packs) and 212 poly totes (300-400 gallons) containing various industrial wastes are present within the warehouse. A tank farm with approximately 24 aboveground storage tanks (ASTs) containing industrial wastes located within secondary containment is located on the north end of the warehouse. A large, concrete-walled aeration basin (also called the bioreactor) is located west of the tank farm. A containment pond is located west of the warehouse and south of the aeration basin. Approximately 225 roll-off boxes fitted with precipitation covers are located on the USOR Property. An inactive rail spur enters the south-central part of the USOR Property from the south and extends north along the west side of the warehouse. A utility right-of-way with various pipelines is present within the southern part of the USOR Property and pipelines are also present outside of the USOR Property along the eastern and western sides.

Currently, the USOR Property is enclosed within a six-foot chain link security fence with locked gates, security cameras have been installed, and access is monitored by a security contractor. The USOR Property was developed for industrial purposes in approximately 1947 and land use has remained industrial since that time. Land use in the vicinity of the USOR Property includes the following:

North: Undeveloped land that includes high-tension power lines, with Vince Bayou and a heavy industrial property located further north.
East: Undeveloped land that includes high-tension power lines, with N. Richey Street, Vince Bayou, and a heavy industrial property located further east.
South: An east-west oriented pipeline right-of-way is located along the southern boundary of the USOR Property with an east-west oriented railroad line, an additional east-west oriented pipeline right-of-way, and a heavy industrial property located further south.
West: A north-south pipeline right-of-way with undeveloped land, a City of Pasadena stormwater detention basin, and a heavy industrial property located further west.

Vince Bayou is located to the north and east of the USOR Property, is joined by Little Vince Bayou to the east of the USOR Property, and flows to the north and intersects with the east flowing Houston Ship Channel (HSC) approximately 0.4 miles north of the USOR Property. The closest residential land use is located approximately 0.08 miles (400 feet) south-southwest of the southwest corner of the USOR Property. The nearest public park (Light Company Park) is located approximately 0.24 miles (1,300 feet) south of the southern property boundary. The nearest school (Pasadena High School) is located approximately 0.5 miles southeast of the southern USOR Property boundary. The PCSMs are based on the premise that the USOR Property land use will remain commercial/industrial in the future. Documentation of future use restrictions as an industrial/commercial property will be provided in the

RI/FS Work Plan.

**Topography**

According to the Pasadena, Texas topographic map (USGS, 1982), the maximum elevation of AOI-1 is approximately 20 feet above mean sea level (msl) near the Containment Pond. The topography of the natural land surface generally slopes to the east and northeast towards Vince Bayou where the elevation is approximately sea level.

**Geology**

Based on the Geologic Atlas of Texas – Houston Sheet (BEG, 1982), subsurface soils at the USOR Property are underlain by the Beaumont Formation, which is comprised mostly of clay, silt, and sand and includes mainly stream channel, point-bar, natural levee, backswamp, and to a lesser extent coastal marsh and mud-flat deposits. The Beaumont Formation beneath the USOR Property is dominantly clay and mud of low permeability, high water-holding capacity, high compressibility, high to very high shrink-swell potential, poor drainage, level to depressed relief, low shear strength, and high plasticity.

**Hydrogeology**

The Gulf Coast Aquifer is a major aquifer underlying AOI-1 that consists of the Evangeline, Chicot and Jasper aquifers, which are composed of discontinuous sand, silt, clay, and gravel beds (TWDB, Report 380, July 2011). The apparent direction of groundwater flow in these units is to the southeast toward the Gulf of Mexico. In addition to the primary aquifers, groundwater often occurs in sand units in the shallow subsurface within the Beaumont Formation. These water-bearing units are not typically used for irrigation or drinking water due to relatively low yields or poor quality.

Limited previous subsurface investigations at the USOR Property have encountered silty clay, clay, silt and sand to a depth of approximately 25 feet below ground surface (bgs). Groundwater was observed at approximately 10 to 12 feet bgs during previous investigations. The apparent direction of groundwater flow at the USOR Property is to the northeast toward Vince Bayou.

**Potential Source Areas and Chemicals of Potential Concern (COPCs)**

The following potential source areas are present at AOI-1:

1) Drums
2) Aeration Basin (Bioreactor)
3) Sumps
4) Totes
5) Containment Pond
6) Aboveground Storage Tanks
7) Roll-off Boxes/Frac Tanks
8) Impacted Soil (including the former buried waste pit to the west of the warehouse that was identified in historical documents)
9) Unknown Subsurface Sources (Pits, Sumps, etc.)
10) Pipelines

Removal actions to address potential source areas 1-7 listed above are being developed/implemented pursuant to the Administrative Settlement Agreement and Order on Consent for a Time-Critical Removal Action dated August 25, 2011 (“Removal Action AOC”). Due to the nature of the removal actions and

the associated field work, there is the potential for interference with the performance of the activities described in this Scope of Work. Consequently, the Work Plan shall include a schedule that coordinates the activities described in this Scope of Work so as to avoid any potential interference.

Attachment D-1 provides for AOI-1: 1) general information, 2) ownership and operational history, 3) a list of historical releases taken from existing documents, 4) investigation history, 5) a list of historical removal and response actions, 6) potential impacts at off-property areas, and the rationale for sample locations at AOI-1 that are provided below in this document. Removal actions conducted by the PRP Group will be documented in separate reports to EPA and TCEQ pursuant to the Removal Action AOC. It should be noted that remedial actions may be necessary pending the outcome of the RI but, at this time, those actions have not been identified.

A preliminary list of COPCs has been developed based on historical data for hazardous substances present at the USOR Property, waste materials previously handled or currently present at the USOR Property, and analytical laboratory results of samples of environmental media collected from the USOR Property and nearby off-property areas. Samples were collected by EPA and TCEQ (or their contractors) during release response actions prior to July 2010 or stabilization activities conducted by EPA. Prior to July 2010, samples were collected during release-related response actions including samples of liquids leaking from containment vessels, ponded liquids, and/or impacted soil. After July 2010, liquid, sludge and solid samples were collected from drums, the bioreactor, sumps, poly totes, above-ground storage tanks, the containment pond, and roll-off boxes. Samples were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), pesticides, and metals, and Total Petroleum Hydrocarbons (TPH). As summarized in the Hazard Ranking System (HRS) Documentation Record (EPA, 2011), VOCs, SVOCs, pesticides, metals, and TPH were detected in the samples and are attributed to the USOR Property. A review of past industrial operations at the USOR Property and the results of previous environmental investigations conducted at the USOR Property support the inclusion of VOCs, SVOCs, pesticides, herbicides, and metals on the initial list of COPCs for the RI. For example, metals (arsenic), pesticides and herbicides are included due to historic use of the property for the manufacture of arsenical pesticide products, and the blending and storage of pesticides and herbicides. The COPC list will be refined after each iteration of the RI/FS as USOR Property data are evaluated such that only those COPCs that originated at the USOR Property are moved forward, as described more fully below.

**Possible Exposure Pathways**

The human health and ecological PCSMs for the USOR Property (Figures 1 and 2) show the range of human health and ecological exposure pathways including the primary and secondary sources, the primary and secondary release mechanisms, the exposure media (i.e., soil, groundwater, surface water, sediment, air, etc.), and potential receptors. The processes or mechanisms by which receptors may reasonably come into contact with USOR Property-related COPCs are shown from left to right on the figure. Exposure pathways are dependent on current and future land use, which is expected to remain as an industrial land use. An exposure pathway is defined by four elements (U.S. EPA, 1989):

- A source material and mechanism of constituent release to the environment;
- An environmental migration or transport media (e.g., soil) for the released constituents;
- A point of contact with the media of interest; and
- An exposure route (e.g., ingestion) at the point of contact.

An exposure pathway is considered “complete” if all four elements are present.

Potentially complete human health exposure pathways are indicated with a “C” in the potential receptors column of Figure 1. Potentially complete pathways are assumed to be complete based on existing

information. Although a pathway may be preliminarily identified as potentially complete, additional data are often needed to confirm that the pathway is complete and evaluate the significance of the potentially complete pathway. The PCSM also identifies possibly complete pathways with a "P" in the potential receptors column of Figure 1. At this stage of the RI/FS, it is not known whether these media have been impacted by USOR Property-related activities. Information related to complete and potentially and possibly complete exposure pathways will be used to identify data gaps and help guide the data collection effort, ultimately ensuring that sufficient data are collected to facilitate quantitative evaluation of these pathways in the human health risk assessment. Pathways that are not viable are considered incomplete and are identified with an "I" in the potential receptors column on Figure 1, most often because the receptor will not contact the media specified.

Potentially complete ecological exposure pathways are indicated with a "C" in the potential receptors column of Figure 2. Potentially complete pathways are assumed to be complete based on existing information. Although a pathway may be preliminarily identified as potentially complete, additional data are often needed to confirm that the pathway is complete and evaluate the significance of the potentially complete pathway. The ecological PCSM also identifies potentially complete pathways for which potential exposures will be evaluated in an iterative manner with a "P" in the potential receptors column of Figure 2. At this stage of the RI/FS, it is not known whether these media have been impacted by USOR Property-related activities. Information related to complete and potentially complete exposure pathways will be used to identify data gaps and help guide the data collection effort, ultimately ensuring that sufficient data are collected to facilitate quantitative evaluation in the ecological risk assessment. Pathways that are not viable are considered incomplete and are identified with an "I" in the potential receptors column on Figure 2, most often because the receptor will not contact the media specified.

In the first iteration of data collection, data will be collected for the on-property media (i.e, soil, groundwater, surface water, and sediment) and off-property soil and groundwater using the initial list of COPCs. The results of the evaluation of the first iteration data will then be used to develop an investigative strategy for off-property sediment and surface water based on those compounds that were determined to have originated at the USOR Property. The specific mechanism/criteria for that determination will be developed in the RI/FS Work Plan. The second iteration of data collection will include sampling of surface water and sediment in drainage paths leading to Vince Bayou and from within Vince Bayou (and possibly Little Vince Bayou), with sample locations/collection details and analyte list developed based on data from the previous investigation iterations. Finally, based on the evaluation of all previously collected data, sampling of fish and/or shellfish in Vince Bayou (and possibly Little Vince Bayou) will be conducted during a third iteration, as necessary. It is envisioned that a streamlined data evaluation and reporting process will be used to move from iteration to iteration in the RI as efficiently as possible (see details in the RI/FS Data Collection Activities section below). After each data collection iteration during the RI, the PCSMs presented in Figures 1 and 2 will be updated and refined as necessary. The iterative approach to the investigation and the streamlined data evaluation and reporting process are described in greater detail in the following sections.

**DATA NEEDS**

Based on an evaluation of the exposure pathways identified in Figures 1 and 2, and an analysis of the information needed to assess the completeness of these pathways, the data needs listed in Table 1 were developed for the USOR Property. Table 1 illustrates the data needs development process by: (1) noting the PCSM exposure medium for exposure pathways that were not judged to be incomplete; (2) identifying the specific data needed to determine whether that pathway is potentially complete; (3) listing the existing data that were reviewed as part of RI/FS scoping; and (4) describing the RI activities, approaches, and data collection methods to be performed to fill the identified data need.

A list of general data needs is also included in Table 1 and includes supplemental information needed for the RI such as land use, quality of habitat, climate, subsurface migration pathways, etc.

FS data needs are not included in Table 1 at this time. As FS data needs are identified as the iterative RI/FS process proceeds, appropriate programs to fill these needs will be developed. The development and evaluation of remedial alternatives will be performed as specified in the RI/FS guidance. First, the risk assessment findings will be used to develop remedial action objectives. General response actions will be developed to address these objectives, and preliminary technologies/alternatives associated with those response actions will be screened. If at any time during this process a data need related to the FS is identified, a program to collect that data will be developed and implemented.

**EXISTING DATA EVALUATION**

As noted above, existing data were reviewed and used during development of the PCSMs and the data needs summary (Table 1).

Existing soil and groundwater data from the USOR Property were compiled into the tables listed below and attached to this Scope of Work. The soil data tables also contain any data from off-property areas that were investigated as a result of past releases from the USOR Property. Surface water and sediment data collected for EPA in 2011 (Weston Solutions, Inc., 2011) from Vince Bayou and Little Vince Bayou were also compiled since these data have been used by EPA to rank the Site using the HRS. All of the existing data are used for scoping purposes only and are not intended for use in risk assessment calculations or as the sole basis for evaluation of potential remedial alternatives in the FS. Sampling locations for the existing data shown in the tables are shown on Figures 4 and 5.

It should be noted that there are limited historic data for soil and groundwater at the USOR Property. Furthermore, much of the soil and groundwater data from historical documentation for the USOR Property are of limited value due to the fact that much of the data lack the required backup information such as sample location maps, quality assurance/quality control (QA/QC) data, and/or analytical method information. Also, the use of older data is limited due to changes in analytical methods, QA/QC procedures, etc. As such, some data from previous investigations at the USOR Property were not included in the summary tables for these and other reasons. Finally, laboratory qualifiers (flags) were not included for all data. Due to the range of different qualifiers used in the data packages, a consistent set of qualifiers was developed and used for the data summary tables.

The following data summary tables were compiled for AOI-1:

Table 2 - Metals Concentrations in Soil Samples
Table 3 – Volatile and Semi-Volatile Organic Compound Concentrations in Soil Samples
Table 4 – Pesticide Concentrations in Soil Samples
Table 5 – Metals and Pesticides Concentrations in Groundwater Samples
Table 6 – Metals Concentrations in Surface Water Samples – 2011 Data
Table 7 – Metals Concentrations in Sediment – 2011 Data
Table 8 – Volatile and Semi-Volatile Organic Compound Concentrations in Sediment – 2011 Data

## DATA QUALITY OBJECTIVES

Data quality objectives (DQOs) (Table 9) are developed as part of the systematic planning process to define the type and quality of the data sufficient to characterize the USOR Property, conduct human health and ecological risk assessments, and perform the evaluation of remedial alternatives. The DQOs, therefore, support the rationale for the USOR Property investigation strategy and approach detailed in the following section. The data quality details of the DQO process will also be documented in the Quality Assurance Project Plan (QAPP) that will be developed with the RI/FS Work Plan.

The DQOs have been developed in general accordance with the "Guidance on Systematic Planning Using the Data Quality Objectives Process, EPA QA/G-4" (EPA, 2006). When data are collected during the RI/FS, the EPA-recommended systematic planning tool is the DQO process. The DQO process is a seven-step planning approach to develop sampling designs for data collection activities that support decision-making. The seven steps of the DQO process described by EPA are:

1. State the problem.
2. Identify the goal of the study.
3. Identify information inputs.
4. Define the boundaries of the study.
5. Develop the analytic approach.
6. Specify performance or acceptance criteria.
7. Develop the plan for obtaining data.

Steps 1 through 4 of the process are included in Table 9 and are discussed below. Steps 5 through 7 will be developed in the RI/FS Work Plan and QAPP since these steps are focused on detailed sampling and analytical processes and are not appropriate for this document. Some of the more important issues related to the DQOs are described in the following paragraphs.

### Step 1: State the Problem

Historical USOR Property information suggests that contamination exists in on-property soil in areas of former operations, and that COPCs may have migrated off-property during unauthorized releases, spills and overland runoff following storm events. Previous sampling efforts, historical aerial photographs, relevant USOR Property information and reports have been thoroughly reviewed to better understand where COPCs may be on-property, what COPCs are potentially present, and what fate and transport of these COPCs may have occurred.

Because of the gradual topographic slope at the USOR Property, if COPCs were transported from the property, they would most migrate from the USOR Property to the east or north, deposit onto the surface soils in these areas and either remain in those soils or be transported further down-slope. Vince Bayou surface water and sediment would be the potential endpoint of transport and migration of USOR Property-related COPCs. Due to the highly industrialized nature of the surrounding area and the numerous possible point and non-point sources of COPCs in Vince Bayou and Little Vince Bayou unrelated to the USOR Property, it is difficult to identify the USOR Property-related COPCs without a thorough and complete understanding of on-property source characteristics and the transport/migration pathways off-property.

Develop the PCSM for the Area of Investigation

The PCSMs introduced above (Figures 1 and 2) convey what is known about the sources, releases, release mechanisms, contaminant fate and transport, exposure pathways, potential receptors and risks. The PCSMs were developed based on the review of relevant USOR Property information and with input from the PRP Group and EPA. Data collected during the RI/FS will be used to verify and revise the models as necessary. These DQOs were developed using the PCSMs.

Establish the Planning Team

The planning team is composed of project management and technical staff from EPA, TCEQ, identified Federal and State Natural Resource Trustees (Trustees), the PRP Group, and Pastor, Behling & Wheeler, LLC (PBW). The Project Team and organization will be described in the RI/FS Work Plan. The project management section of the RI/FS Work Plan will describe the decision-level authority and communication. Project management team members have been designated as members of the project decision-making team and as technical expertise support. Lines of communication are established between field staff, project management, the PRP Group, EPA, and other agency stakeholders to convey data from the field to decision makers and to convey decisions back to the field staff.

Identify Available Resources, Constraints and Deadlines

During the systematic planning, several critical field activities were identified. The outcome of these critical field activities may impact the scope and extent of other USOR Property investigation tasks. The critical field activities are the on-property surface and subsurface soil sampling, on-property sediment and surface water sampling, installation of monitoring wells on-property, and groundwater sampling from these monitoring wells. Based on the data obtained from the on-property field work, additional field activities will be undertaken in subsequent iterations. These subsequent iterations are anticipated to include the installation of additional monitoring wells on-property or off-property, groundwater sampling of these monitoring wells, off-property surface and/or subsurface soil sampling, and collection of background soil samples. Data obtained from these additional on-property and/or off-property sampling efforts will be used to focus subsequent off-property sediment and surface water (near the USOR Property and background), and potential fish and/or biota sampling investigation iterations.

Other practical constraints such as access and physical location that will affect characterization activities will need to be addressed. The presence of pipelines, utility easements and other AOI-1 features will be evaluated and sampling locations may change from the locations identified in this Scope of Work if necessary. The overall deliverable for the investigative activities at the USOR Property will be the RI/FS Report. However, several data assessment meetings (working meetings) will be held with EPA, TCEQ and Trustees stakeholders to review the RI data as it is collected and prior to conducting the next iteration of sampling, and develop work plan refinements as needed.

The available resources include the project management, technical staff, and drilling, and environmental laboratory contractors. Scheduling constraints of these personnel are not anticipated at this time. USOR Property characterization will be conducted in accordance with the Scope of Work provided herein and described in greater detail in the RI/FS Work Plan.

**Step 2. Identify the Goal of the Study**

The over-arching goals for the project are to characterize nature and extent of contamination associated with past USOR Property-related activities, demonstrate whether a COPC originated from the USOR Property, estimate potential human health and ecological risks from USOR Property-related COPCs, and design an effective remedial action plan for USOR Property-related impacts.

The review of historical data for the USOR Property was used in conjunction with the PCSMs to develop the data needs table shown in Table 1. This table was used to tie the potentially complete exposure pathways to the media of concern so that relevant USOR Property data could be collected to support the goals of the study.

At this point in the DQO process, the principal study questions, actions and decision statements are developed in a detailed manner for each media to be investigated. The result of these and subsequent steps of the DQO development process are presented in Table 9.

**RI/FS DATA COLLECTION ACTIVITIES**

The PCSMs, the conceptual descriptions of RI/FS activities in Table 1, and the DQOs were used to develop the initial RI/FS data collection activities and sample locations described below. Historical information (e.g., maps, aerial photographs, reports and other documentation) regarding potential source areas, property reconnaissance, and to a lesser degree the limited existing data, were used to guide the placement of initial investigation locations. Attachment D-1 provides a more detailed discussion of the rationale for each sample location for on-property media as well as off-property soil sample locations. These samples were selected in order to optimize the likelihood of detecting potential impacts from the USOR Property. Relative to a grid-based sampling program, these judgmental samples will likely overestimate potential risk but this type of sampling will provide a higher degree of confidence in evaluating whether the COPC originated at the USOR Property. The RI/FS Work Plan and RI Report will include information related to the sampling scheme and the adequacy of spatial coverage to satisfy project goals. The number of samples and sample locations ultimately needed to satisfy overall RI/FS objectives will be determined by the USOR Property conditions and the data obtained during the iterative phases of the RI/FS. However, consistent with the overarching objective of this scope of work, sample numbers/locations are proposed herein for the initial investigation phase (i.e., on-property soil, groundwater, surface water and sediment sampling and off-property soil and groundwater) to fill the identified data needs.

As noted previously and as illustrated by the PCSMs, data needs summary table (Table 1), and DQOs, investigation activities will initially focus on on-property environmental media (i.e., on-property soil, on-property groundwater, on-property surface water and on-property sediment) and off-property soil and groundwater. An iterative approach is proposed as the logical and effective and time-efficient manner for which the RI should be performed. This is due to the nature of the USOR Property where the source areas are located topographically higher than some of the potential receptors and potential impacts are primarily related to the movement of COPCs from the USOR Property to the receptors via surface drainage. Furthermore, receptors in Vince Bayou and Little Vince Bayou also are potentially impacted from the other documented industrial activities within the Vince Bayou and Little Vince Bayou watershed. In this regard, the determination of the impacts from the USOR Property, versus those from other sources of contaminants to Vince Bayou and Little Vince Bayou, must be carefully executed through the iterative progression of investigation activities beginning on the USOR Property and adjacent properties and working to Vince Bayou and including a comprehensive background study for media of

potential concern. This method will allow for the allocation of the relative contributions of COPCs to Vince Bayou and Little Vince Bayou among the multiple potential sources.

A data assessment meeting will be held after completing the data collection for each iteration to review the data, prior to proceeding with the next iteration of sampling. The iterative data collection program is described more fully below:

| ITERATION | DESCRIPTION |
|---|---|
| 1 | AOI-1 on-property media (soil, groundwater, and surface water/sediment in the low-lying areas on the southwestern portion of AOI-1) and off-property soil and groundwater will be sampled and analyzed for the initial list of COPCs (metals, VOCs, SVOCs, pesticides, herbicides, and TPH) per the RI/FS Work Plan Sampling and Analysis Plan (SAP) and QAPP. After data validation, the sample concentrations will be compared to the screening criteria for that medium to be developed in the RI/FS Work Plan to determine whether the compound originated at the USOR Property. Data assessment tools (summary tables, maps, GIS data visualization, etc.) will be used to assist in making this determination. A working "data assessment" meeting will be held with the EPA, TCEQ and Trustees stakeholders where the data are reviewed and decisions are made regarding: 1) COPCs that will be carried forward and COPCs that can be eliminated from subsequent iterations of the RI/FS; and 2) locations of off-property surface water and sediment samples for the second iteration of the RI/FS. A Work Plan Refinement Notice (WRN) with the agreed-upon recommendations for the next iteration of sampling will be prepared for EPA approval. Upon receiving EPA approval, the specific activities proposed in the WRN will be initiated. |
| 2 | AOI-1 off-property surface water and sediment will be sampled and analyzed for the COPCs that were carried forward from the first iteration of sampling. After data validation, a working "data assessment" meeting will be held with the EPA, TCEQ and Trustees stakeholders where the data comparisons are reviewed and decisions are made regarding 1) COPCs that will be carried forward and COPCs that can be eliminated from subsequent iterations of the RI/FS based on whether that COPC originated at the USOR Property; 2) methods and locations for collection of fish and shellfish samples (if necessary) from Vince Bayou (and Little Vince Bayou, if needed) for the third iteration of the RI/FS; 3) other sampling and analytical considerations, etc. A WRN with the agreed-upon recommendations for the next iteration of sampling will be prepared for EPA approval. Upon receiving EPA approval, the specific activities proposed in the WRN will be initiated. |
| 3 | Prior to sampling fish and shellfish, sediment and surface water will be evaluated to determine what COPCs should be included in the fish/shellfish sampling program per recommendations and procedures identified in TCEQ, 2002, which is largely based on EPA procedures for evaluating potential impacts from the fish ingestion pathway when establishing surface water quality standards. Fish and shellfish will be sampled and analyzed for the COPCs that were carried forward from the second iteration of sampling. After data validation, the sample concentrations will be compared to the screening criteria for that medium to be developed in the RI/FS Work Plan or subsequently. A working "data assessment" meeting will be held with the EPA, TCEQ and Trustees stakeholders where the data comparisons are reviewed and decisions are made regarding the need for subsequent sampling for any media. |

Given that the number of samples, the locations of the samples, and analytes to be measured in the samples for the off-property sediment, surface water, and biota cannot be determined until after the on-property media and off-property soil and groundwater data are evaluated, locations for off-property sediment, surface water and biota sampling activities that are described in the following sections and presented on the attached maps are subject to change. Detailed descriptions of the RI data collection activities will initially be provided in the RI/FS Work Plan, the Field Sampling Plan (FSP) and the QAPP as specified in the SOW. These plans will include descriptions of data collection activities for all iterations of the RI/FS. In other words, even though a particular media will not be sampled in the first iteration of the RI/FS (e.g., off-property sediment), the proposed methods for collection of those particular media samples will be included in the RI/FS Work Plan. The specific locations, analytes, and other specific information required for data collection in iterations two and three will be provided in the WRNs.

A comprehensive soil, sediment, and surface water background study (and biota if necessary) will be conducted to provide information related to whether a COPC originated at the USOR Property. Detailed information related to this study will be provided in the RI/FS Work Plan after additional research of the surrounding area and discussion with EPA, TCEQ and Trustees stakeholders on appropriate background reference areas.

Additional information that becomes available before or during the RI/FS will be considered and the investigation plan updated, as appropriate (e.g., the addition of sampling locations at the location of a previously unknown release). Also, field observations made during the field investigation will be used to guide additional investigation efforts and/or sampling, as appropriate.

**General Investigation Activities**

As shown in the General Data Needs section of Table 1, general investigation activities will be conducted and are related to the 1) potential presence of threatened and endangered species in the USOR Property vicinity; 2) subsurface utilities present at the USOR Property and off-property areas; 3) erosion potential of soils; 4) climate; 5) zoning and land use; 6) location of the flood plain; 7) historic USOR Property ownership activities, deed records, restrictive covenants, or deed notices; and 8) presence of ecological habitat. In addition, a water well records search will be conducted to identify registered water wells located within ½-mile of the USOR Property. A walking survey of immediately adjacent properties will also be conducted to identify the potential presence of un-registered water wells.

**Analytical Methods and Analytes**

The historic USOR Property ownership, information about past releases and operations at the property, previous environmental sampling conducted to-date at the property, and waste sampling conducted during emergency response activities indicate that various metals, petroleum hydrocarbons, pesticides and herbicides, several VOCs and SVOCs have potentially impacted AOI-1. Based on the COPCs described above, samples for the first iteration of data collection will be analyzed using the methods listed in the following table:

| COPC | ANALYTICAL METHOD | ANALYTES |
|---|---|---|
| VOCs | USEPA Method 8260B | Target Compound List (TCL) |
| SVOCs | USEPA Method 8270C | TCL |
| Metals | USEPA Methods 6010B/7471A | Toxic Analyte List (TAL)[1] |

[1] Aluminum, antimony, arsenic, barium, beryllium, cadmium, calcium, chromium, cobalt, copper, iron, lead, magnesium, manganese, mercury, nickel, potassium, selenium, silver, sodium, thallium, vanadium, and zinc.

| | | |
|---|---|---|
| Pesticides | USEPA Method 8081 | TCL |
| Herbicides | USEPA Method 8151A | Per SW 846 Method |
| TPH | TX 1005 | Per TX 1005 Method |

Based on the information provided in the Evaluation of Analytical Data Collected for PCBs and Dioxins, dated November 19, 2013, these two classes of contaminants are not included in the list of COPCs for USOR Operations. However, if additional sources of PCBs and dioxins are discovered then this decision will be revisited.
The COPCs for off-property sediment, surface water and biota will be developed based on the results from the previous iterations of the investigation and whether the COPC was shown to originate at the USOR Property. Sample collection techniques, analytical method details, and other analyses that will be conducted on selected samples (e.g., total organic carbon, total dissolved solids, bulk density, grain size, etc.) will be described in detail in the FSP and QAPP to be submitted with the RI/FS Work Plan.

**AOI-1 On-Property and Off-Property Soil Investigation**

The AOI-1 on-property soil investigation will be performed as described in the following paragraphs:

Soil Borings

Proposed soil boring locations are shown on Figure 6. The locations of soil borings are based on review of historic documents, historic aerial photographs, and AOI-1 reconnaissance observations. More specifically, the locations coincide with one or more of the following:

1) Locations of past industrial activities (e.g., railroad spur, loading/unloading pads, former tanks, pipelines, etc.)
2) Locations of current industrial activities (roll-off boxes, bioreactor, etc.)
3) Areas of stressed vegetation;
4) Areas of disturbed soil (as suggested by historical aerial photographs and reconnaissance observations);
5) Locations of historical releases including those described in the HRS documentation and as summarized in Attachment D-1 to this Scope of Work;
6) Previous soil boring location indicating potential contamination;
7) Historic areas of stockpiled material based on aerial photographs; and
8) Areas that appear to receive drainage from USOR Property source areas.

Some of the off-property soil sample locations correspond to historic potential source areas (e.g., the bioreactor release location to the north of the USOR Property), areas of disturbed soil, or areas of stockpiled material. These locations and rationale for soil sample location are discussed in greater detail in Attachment D-1. Preliminary locations shown on Figure 6 are subject to revision based on the data and information collected during the investigation.

All soil borings will be advanced to the top of the uppermost water-bearing unit (anticipated to be approximately 10-15 feet below ground surface) for characterization of surface and subsurface soil and the collection of soil samples. Discrete soil samples will be collected for laboratory analysis of the initial list of COPCs (VOCs, SVOCs, metals, pesticides, herbicides, and TPH). Samples will be collected from the following intervals:

- Surface (0.0-0.5 ft. bgs);

- Shallow (0.5-5.0 ft. bgs) - actual sample interval will be selected from the 0.5-5.0 bgs interval based upon field conditions including visual evidence of contamination, organic vapor meter (OVM) measurements, etc. or from 4.0-5.0 bgs if no evidence of contamination is observed.
- Subsurface (greater than 5.0 ft.) – actual sample interval will be selected from the greater than 5.0 ft interval based upon field conditions including visual evidence of contamination, OVM measurements, etc. or from the one-foot interval above the saturated zone if no evidence of contamination is observed.

The specific sample intervals will depend on the location and purpose of the particular sample. At locations based on the presence of a current or historic source area or evidence of industrial activity (shown in red on Figure 6), samples will be collected from all three sample intervals listed above. At sample locations along drainage pathways (shown in blue on Figure 6), samples will be collected from the upper two intervals (surface soil, shallow soil).

Selected representative soil samples will be analyzed for potential fate and transport parameters (total organic carbon, bulk density, etc.). A detailed description of the program for soil sample analysis will be presented in the RI/FS Work Plan, the FSP, and the QAPP.

Given the characteristics of AOI-1 (i.e., unconsolidated sediments, shallow depth to groundwater, etc.), it is anticipated that soil sampling will be conducted using direct-push technology (DPT) (i.e., geoprobe).

During the soil investigation, an evaluation of AOI-1 characteristics (e.g., presence and quality of vegetative cover, soil type, etc.) will be performed to qualitatively evaluate the potential for erosion of soils.

The soil boring and the Groundwater High Resolution Site Characterization (HRSC) (EPA, 2003) program (see below) will be conducted prior to the investigations of the other on-property and off-property media. Data and observations from the soil sampling program may be used to revise the subsequent media investigations described in the following section. For example, if field observations during soil sampling activities indicate the presence of non-aqueous phase liquids (NAPL) at AOI-1, the locations and/or quantity of monitoring wells and/or the methods for well construction may be altered. Additional discussion of this issue and detailed procedures for the on-property and off-property sampling program will be presented in the RI/FS Work Plan, the FSP, and the QAPP.

**AOI-1 On-Property and Off-Property Groundwater Investigation**

As shown on Table 1, the AOI-1on-property and off-property groundwater investigation will be performed as described in the following paragraphs.

High-Resolution Site Characterization

Concepts of the HRSC will be incorporated into the on-property groundwater investigation, as appropriate based on AOI-1 conditions. Initially, a series of vertical subsurface profiles using cone penetrometer testing (CPT) and/or the rapid optical screening tool (ROST) will be conducted perpendicular to the direction of groundwater flow (presumed to be to the northeast toward Vince Bayou, based on previous investigations at AOI-1) (Figure 6). These profiles will allow for the collection of a large amount of subsurface data in a short period of time. The CPT/ROST locations will be advanced to the base of the uppermost water bearing unit. Although limited information is available on the subsurface stratigraphy, it is likely that the uppermost groundwater bearing unit is no deeper than 30 feet bgs. The maximum depth of the CPT/ROST investigations will be 50 feet. At most of the transect locations, only the CPT tool will be advanced to provide stratigraphic information (i.e., soil type – sand, silt, or clay). At locations in the

central part of the USOR Property around the warehouse, the CPT and ROST tool will be advanced. The ROST tool provides information on soil type and the potential presence of NAPL in soils. If evidence of significant contamination is observed at any location (e.g., the presence of NAPL), advancement of the CPT/ROST tool will be halted. If evidence of significant contamination is not observed, the CPT/ROST boring will continue until the base of the uppermost groundwater bearing unit.

The CPT/ROST borings will be ground-truthed using DPT soil borings. After review of the CPT/ROST data, DPT borings will be conducted at a subset of the CPT/ROST boring locations. For the DPT borings, soil will be collected for visual inspection for the entire length of the boring. Furthermore, the CPT/ROST borings will be completed prior to the on-property soil investigation described above. Information from the CPT/ROST borings may be used to revise the locations, sampling intervals, etc. for the on-property soil borings. Use of CPT/ROST is not currently proposed for the off-property groundwater investigation but could be added based on the CPT/ROST results from the on-property groundwater investigation.

Additional HRSC techniques will be evaluated as the investigation proceeds. For instance, the collection of depth-discrete groundwater samples using multi-level sampling tools may be proposed if distinct multiple groundwater bearing units are observed, or if the groundwater-bearing units are of significant thickness.

Information from the HRSC techniques, in conjunction with information from the monitoring wells (stratigraphy, water levels, etc.) will allow for assessment of the potential hydrogeologic connection between USOR Property groundwater and Vince Bayou.

Detailed procedures for the groundwater HRSC program will be provided in the RI/FS Work Plan, FSP, and QAPP.

Monitoring Well Installation and Groundwater Sampling

The on-property soil sampling and groundwater HRSC programs will be used to determine the locations for permanent groundwater monitoring wells to be installed in the uppermost groundwater bearing unit at AOI-1 (Figure 6). If possible, soil borings will be converted to permanent monitoring wells at the locations where soil boring and monitoring well locations are co-located (Figure 6).

After development, samples will be collected from the monitoring wells and analyzed for the initial list of COPCs. Samples from selected monitoring wells will be analyzed for general or natural attenuation parameters such as cations/anions, total dissolved solids (TDS), etc. Groundwater field parameters (temperature, specific conductance, pH, dissolved oxygen (DO), oxidation-reduction potential (ORP), etc.) will be measured during sample collection at all monitoring wells. Samples will be collected for total and dissolved concentrations of selected metals.

Groundwater sampling events will be conducted to assess seasonal variability (e.g., sample quarterly for a year, evaluate results, and then determine appropriate monitoring program frequency).

All wells will be surveyed by a professional land surveyor to determine spatial (X-Y) coordinates and the elevation above mean sea level of the top of the monitoring well casing (Z).

At a minimum, a water-level measurement will be recorded from each well prior to it being sampled. Separate water-level measurement events not associated with groundwater sampling may also be conducted. If NAPL is encountered, an in-well NAPL thickness measurement will be performed.

The results of the on-property groundwater investigation will be used to 1) determine the need for the investigation of deeper groundwater at AOI-1; and 2) guide off-property groundwater investigation activities. If necessary, these investigations will be conducted during the off-property soil investigation (i.e., the second iteration of investigation).

Detailed procedures for groundwater monitoring well installation and sampling will be provided in the RI/FS Work Plan, FSP, and QAPP.

Hydraulic Testing

Hydraulic testing (slug testing) will be conducted in selected wells to estimate the hydraulic conductivity of the groundwater bearing unit(s). These data will be used to establish groundwater classification (in conjunction with TDS concentrations), estimate groundwater flow velocities, contaminant transport, etc. Detailed procedures for hydraulic testing will be provided in the RI/FS Work Plan, FSP, and QAPP.

**AOI-1 On-Property Sediment Investigation**

Samples of sediment and will be collected from the two areas at the southwest portion of the USOR Property as noted on Figure 6. The samples will be analyzed for COPCs and other parameters such as TOC, grain size, etc. Sample collection methods will be described in the RI/FS Work Plan, FSP and QAPP.

**AOI-1 On-Property Surface Water Investigation**

Samples of surface water will be collected from the two areas at the southwest portion of AOI-1as noted on Figure 6 (if present). The samples will be analyzed for COPCs. For the metals, analysis will be conducted for total and/or dissolved concentrations depending on the specific COPC (and as designated by the ecological benchmark table). Collection of samples from these areas depends on conditions during the investigation since these areas likely do not always contain standing water. Sample collection methods will be described in the RI/FS Work Plan.

**AOI-1 Off-Property Surface Water and Sediment Investigation**

A program for the evaluation of COPCs from USOR Property-related activities in Vince Bayou (and possibly Little Vince Bayou) surface water and sediment will be developed in a WRN. As shown on Table 1, information on the watershed flow paths, surface water/sediment hydrodynamics, and other potential sources of COPCs to Vince Bayou and Little Vince Bayou will be reviewed during the development of this program. Surface water and sediment samples in Vince Bayou and Little Vince Bayou will be collected, as required, for analysis of COPCs retained from earlier iterations of the RI/FS.

**USOR Property Fish/Shellfish Investigation**

Sampling of fish, shellfish or other biota in Vince Bayou (and Little Vince Bayou) may be conducted if the results of previous RI/FS data collection iterations show that USOR Property-related COPCs are present in surface water and/or sediment at concentrations above screening levels or if bio-accumulative COPCs are present above applicable thresholds. A WRN will be developed that describes the appropriate species for sampling, the methods for sampling, the COPCs to be analyzed, etc.

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**TABLES**

**TABLE 1**
**DATA NEEDS SUMMARY**
**USOR SUPERFUND SITE – USOR PROPERTY – AREA OF INVESTIGATION 1**

| PRELIMINARY CONCEPTUAL PROPERTY MODEL POTENTIAL EXPOSURE MEDIUM[(1)] | ITERATIVE DATA NEED | APPROACH TO FILL DATA NEED | | |
|---|---|---|---|---|
| | | EXISTING DATA REVIEWED | REMEDIAL INVESTIGATION ACTIVITY | REMEDIAL INVESTIGATION APPROACH AND DATA COLLECTION METHODS |
| On-Property Groundwater | 1) AOI-1-specific hydrogeology (hydraulic gradient, hydraulic conductivity, hydrostratigraphy, lithology, etc.).<br>2) Nature and extent of COPC concentrations.<br>3) General groundwater chemistry at AOI-1 (salinity, cations/anions, groundwater classification, etc.).<br>4) Uses of groundwater at and in the vicinity of AOI-1.<br>5) Discharge of groundwater to surface water.<br>6) Potential for groundwater to contribute to vapor intrusion and ambient air.<br>7) Potential presence of other groundwater plumes in the area. | 1) Existing hydrogeology data for AOI-1.<br>2) Area water well survey and use survey.<br>3) Historic groundwater concentration data.<br>4) Surrounding property groundwater quality data. | 1) Evaluate AOI-1 hydrogeology.<br>2) Evaluate concentrations of COPCs in uppermost groundwater-bearing unit.<br>3) Perform more detailed water well and water use survey of area.<br>4) Perform a water well records search within ½-mile of AOI-1. Confirm that nearby properties are provided potable water from the local municipality.<br>5) Perform subsurface utility survey to identify obstructions for drilling program and preferential pathways for migration of COPCs.<br>6) Identify ongoing and/or historic spills/releases that have or have the potential to impact groundwater.<br>7) Evaluate potential for discharge of | 1) Perform initial high-resolution property characterization (HRSC) using a combination of assessment methods (e.g., cone penetrometer testing, depth-discrete groundwater sampling of the uppermost groundwater unit, and traditional soil borings).<br>2) Install permanent groundwater monitoring wells at pre-selected locations based on results of review of initial property characterization results. Based on the results, refine the AOI-1 COPC list.<br>3) Measure general groundwater parameters (temperature, specific conductance, pH, dissolved oxygen (DO). oxidation-reduction potential (ORP), TDS, etc.).<br>4) Collect groundwater samples to characterize on-property groundwater and evaluate potential impacts from source areas. Assess the potential for off-property migration and vertical migration on-property, if needed.<br>5) Conduct groundwater sampling events to assess seasonal variability e.g., quarterly for a year, evaluate, then determine appropriate monitoring program).<br>6) Perform hydraulic testing (slug testing) in selected wells. This data will be used with TDS data to establish groundwater classification.<br>7) Evaluate total versus dissolved concentrations of metals in groundwater samples.<br>8) Perform a water well records search to identify registered water wells located within ½-mile of AOI-1. In addition, perform a walking survey of immediately adjacent properties to identify the potential presence of un-registered water wells.<br>9) Assess the hydrogeologic connection and the |

**TABLE 1**
**DATA NEEDS SUMMARY**
**USOR SUPERFUND SITE – USOR PROPERTY – AREA OF INVESTIGATION 1**

| PRELIMINARY CONCEPTUAL PROPERTY MODEL POTENTIAL EXPOSURE MEDIUM[1] | ITERATIVE DATA NEED | APPROACH TO FILL DATA NEED | | |
|---|---|---|---|---|
| | | EXISTING DATA REVIEWED | REMEDIAL INVESTIGATION ACTIVITY | REMEDIAL INVESTIGATION APPROACH AND DATA COLLECTION METHODS |
| | | | groundwater to surface water.<br>8) Evaluate groundwater data to assess possibility of vapor intrusion (model). | potential for discharge of groundwater to Vince Bayou through the evaluation of water levels and the development of hydrogeologic cross-sections. |
| On- and Off[2]-Property Soil | 1) Nature and extent of COPC concentrations in soil.<br>2) Potential source areas (e.g., bioreactors, tank farm, roll off boxes, former buried waste pit, etc.).<br>3) Surface water drainage patterns.<br>4) General soil characteristics to evaluate impact on COPC mobilization and sequestration in soil. | 1) Concentrations of COPCs in soil collected during various investigations at AOI-1, and correlation of existing soil data with potential sources (including historical sources). | 1) Evaluate lateral and vertical extent of COPCs in samples of surface soil (0 to 0.5 ft bgs), shallow soils (0.5 to 5 ft bgs) and subsurface soil (greater than 5 ft bgs).<br>2) Collect general soil chemistry data (pH, TOC, grain size, etc.).<br>3) Evaluate topography and preferential surface water drainage pathways.<br>4) Identify ongoing and/or historic spills releases that have or have the potential to impact soil. | 1) Use detailed topographic survey of AOI-1 and adjacent and contiguous off-property areas (to Vince Bayou) to identify drainage areas.<br>2) Advance soil borings to top of uppermost water-bearing unit to characterize surface and subsurface soil.<br>3) Collect discrete soil samples for laboratory analysis of COPCs.<br>4) Analyze selected representative samples for potential fate and transport parameters (total organic carbon, bulk density, etc.).<br>5) Evaluate property characteristics (e.g., presence and quality of vegetative cover, soil type, etc.) to qualitatively evaluate potential for erosion of soil.<br>6) Refine COPC list based on existing and newly-acquired data set. |

**TABLE 1**
**DATA NEEDS SUMMARY**
**USOR SUPERFUND SITE – USOR PROPERTY – AREA OF INVESTIGATION 1**

| PRELIMINARY CONCEPTUAL PROPERTY MODEL POTENTIAL EXPOSURE MEDIUM[(1)] | ITERATIVE DATA NEED | APPROACH TO FILL DATA NEED | | |
|---|---|---|---|---|
| | | EXISTING DATA REVIEWED | REMEDIAL INVESTIGATION ACTIVITY | REMEDIAL INVESTIGATION APPROACH AND DATA COLLECTION METHODS |
| On-Property Sediment (southeast areas of AOI-1 where surface water is present for the majority of the year) | 1) Concentrations of COPCs in on-property sediment samples.<br>2) Nature of on-property sediment, i.e., is it beneath ponded rainwater or from other sources, is it ephemeral, etc.?<br>3) Adequacy of the habitat in the areas where sediment is present. | 1) Source data (concentrations of COPCs, source type, etc.)<br>2) Historical information on releases from AOI-1.<br>3) Surface runoff patterns at AOI-1 to areas of standing water.<br>4) Concentrations of COPCs in on-property soil (no on-property sediment data are available). | 1) Identify ongoing and/or historic spills/releases that have or have the potential to impact on-property sediment.<br>2) Collect sediment samples from areas of standing water on-property. | 1) As appropriate based on the nature of the sediment at AOI-1, collect sediment samples for analysis of AOI-1 COPCs, organic carbon, grain size, etc. |
| On-Property Surface Water (southeast areas of AOI-1 where surface water is present for the majority of the year) | 1) Concentrations of COPCs in on-property surface water samples.<br>2) Nature of the on-property surface water; i.e., is it ponded rainwater or from other sources, is it ephemeral, etc.? | 1) Source data (concentrations of COPCs, source type, etc.)<br>2) Historical information on releases from AOI-1.<br>3) Surface runoff patterns at AOI-1 to areas of standing water.<br>4) Nature and extent of COPCs in on-property soil. | 1) Identify ongoing and/or historic spills/releases that have or have the potential to impact on-property surface water.<br>2) Collect data necessary to characterize surface water flow regime and origin of standing water. | 1) Perform detailed topographic survey to indicate where standing water will collect on-property.<br>2) As appropriate based on the nature of the surface water, collect surface water samples from standing water for analysis of COPCs. For metals, analysis will be conducted for total and/or dissolved concentrations depending on the COPC (and as designated by eco benchmark table). |

**TABLE 1**
**DATA NEEDS SUMMARY**
**USOR SUPERFUND SITE – USOR PROPERTY – AREA OF INVESTIGATION 1**

| PRELIMINARY CONCEPTUAL PROPERTY MODEL POTENTIAL EXPOSURE MEDIUM[(1)] | ITERATIVE DATA NEED | APPROACH TO FILL DATA NEED | | |
|---|---|---|---|---|
| | | EXISTING DATA REVIEWED | REMEDIAL INVESTIGATION ACTIVITY | REMEDIAL INVESTIGATION APPROACH AND DATA COLLECTION METHODS |
| On-Property Air | 1) COPC concentrations in on-property air (derived from COPCs concentrations in on-property soil). | 1) Concentrations of COPCs in on-property soil collected during various investigations at AOI-1.<br>2) Review of existing ambient air monitoring data for area, if available. | 1) Use on-property soil COPC concentration data to estimate and/or model potential emissions of volatile organic compounds and fugitive dust in on-property air. | 1) Evaluate AOI-1 characteristics (e.g., presence and quality of vegetative cover, soil type, etc.).<br>2) Evaluate local meteorological data.<br>3) Estimate and/or model potential COPC concentrations in on-property air using on-property soil and groundwater COPC concentrations data and qualitative data described above. |
| Off-Property Air | 1) COPC concentrations in off-property air (derived from COPCs concentrations in off-property soil) | 1) Concentrations of COPCs in off-property soil collected during various investigations at the Property.<br>2) Review of existing ambient air monitoring data for property area, if available. | 1) Use off-property soil COPC concentration data to estimate and/or model potential emissions of volatile organic compounds and fugitive dust in off-property air. | 1) Evaluate off-property characteristics (e.g., presence and quality of vegetative cover, soil type, etc.).<br>2) Evaluate local meteorological data.<br>3) Estimate and/or model potential COPC concentrations in off-property air using off-property soil COPC concentrations data and qualitative data described above. |

**TABLE 1**
**DATA NEEDS SUMMARY**
**USOR SUPERFUND SITE – USOR PROPERTY – AREA OF INVESTIGATION 1**

| PRELIMINARY CONCEPTUAL PROPERTY MODEL POTENTIAL EXPOSURE MEDIUM[(1)] | ITERATIVE DATA NEED | APPROACH TO FILL DATA NEED | | |
|---|---|---|---|---|
| | | EXISTING DATA REVIEWED | REMEDIAL INVESTIGATION ACTIVITY | REMEDIAL INVESTIGATION APPROACH AND DATA COLLECTION METHODS |
| Off-Property Surface Water [(2)] | 1) Presence of surface water and associated uses.<br>2) Watershed sub-basin.<br>3) Commercial, industrial, and municipal activities located along Vince Bayou and Little Vince Bayou (up-stream of AOI-1), including the identification of permitted outfalls.<br>4) Documented "spills/ releases" within the watershed sub-basin that had and/or continue to have the potential to impact surface water at AOI-1.<br>5) Surface water flow characteristics.<br>6) Background concentrations of COPCs in Vince Bayou and Little Vince Bayou surface water.<br>7) Concentrations of COPCs in surface water samples attributable to AOI-1 sources. | 1) Source data (concentrations of COPCs, source type, etc.).<br>2) Historical information on releases from AOI-1 to soil and surface water.<br>3) Surface water drainage patterns at AOI-1 to off-property areas, extending to Vince Bayou and Little Vince Bayou.<br>4) Nature and extent of COPCs in on-property and off-property soil.<br>5) COPC concentration data from samples of surface water.<br>6) Surface water advisories and associated data. | 1) Delineate the boundary and drainage within the watershed sub-basin.<br>2) Identify potential land use practices that might have impacted surface water adjacent to AOI-1.<br>3) Identify on-going and/or historic spills/releases that have or have the potential to impact surface water.<br>4) Collect data to characterize surface water flow regime (e.g., flow velocity, groundwater to surface water interactions, etc.).<br>5) Evaluate the surface water quality and the potential presence of COPCs in surface water. | 1) Obtain information from the USGS and other local sources to define the extent and flow paths within the watershed sub-basin.<br>2) Perform an area reconnaissance to identify properties located within the watershed sub-basin that have the potential to impact the surface water system. After facility identification, obtain regulatory information from public sources to confirm facility operations.<br>3) Perform a regulatory database search to identify spills and/or releases that have occurred within the watershed that reached or had the potential to reach Vince Bayou or Little Vince Bayou.<br>4) Obtain publically available information on the physical flow properties of Vince Bayou and Little Vince Bayou (e.g., under normal and storm events).<br>5) Collect surface water samples in Vince Bayou and Little Vince Bayou for analysis of water quality parameters and COPCs. As part of this assessment, address total versus dissolved COPC concentrations, designed to address ecological benchmark criteria.<br>6) Evaluate Vince Bayou and Little Vince Bayou surface water sample COPC data relative to background COPC data for surface water samples collected in Little Vince Bayou as well as upstream in Vince Bayou. |

**TABLE 1**
**DATA NEEDS SUMMARY**
**USOR SUPERFUND SITE – USOR PROPERTY – AREA OF INVESTIGATION 1**

| PRELIMINARY CONCEPTUAL PROPERTY MODEL POTENTIAL EXPOSURE MEDIUM[1] | ITERATIVE DATA NEED | APPROACH TO FILL DATA NEED | | |
|---|---|---|---|---|
| | | EXISTING DATA REVIEWED | REMEDIAL INVESTIGATION ACTIVITY | REMEDIAL INVESTIGATION APPROACH AND DATA COLLECTION METHODS |
| Off-Property Sediment [2] | 1) Sediment and surface water hydrodynamics in Vince and Little Vince Bayou.<br>2) Background concentrations of COPCs in Vince Bayou and Little Vince Bayou sediment.<br>3) Concentrations of COPCs in sediment samples attributable to potential AOI-1 sources. | 1) Source data (concentrations of COPCs, source type, etc.).<br>2) Historical information on releases from AOI-1.<br>3) Surface water drainage patterns from property extending to Vince Bayou and Little Vince Bayou.<br>4) Nature and extent of COPCs in on-property and off-property soil.<br>5) COPC concentration data from historic sediment samples. | 1) Identify ongoing and/or historic spills/releases that have or have the potential to impact off-property sediment.<br>2) Collect data necessary to characterize sediment regime (sediment thickness, depositional patterns, TOC, grain size, etc.).<br>3) If necessary based on iterative approach to characterization, collect samples of sediment for analysis of AOI-1 COPCs. | 1) Refine AOI-1 COPC list by evaluating source area, soil and groundwater sample data.<br>2) Collect sediment samples in Vince Bayou and Little Vince Bayou for analysis of AOI-1 COPCs, if warranted.<br>3) Evaluate potential for AOI-1 to contribute COPCs to sediment in Vince Bayou above background levels collected in Little Vince Bayou and upstream in Vince Bayou.<br>4) Evaluate general chemistry of sediment (pH, TOC, grain size, organic carbon, etc.) in all samples. |

**TABLE 1**
**DATA NEEDS SUMMARY**
**USOR SUPERFUND SITE – USOR PROPERTY – AREA OF INVESTIGATION 1**

| PRELIMINARY CONCEPTUAL PROPERTY MODEL POTENTIAL EXPOSURE MEDIUM[1] | ITERATIVE DATA NEED | APPROACH TO FILL DATA NEED | | |
|---|---|---|---|---|
| | | EXISTING DATA REVIEWED | REMEDIAL INVESTIGATION ACTIVITY | REMEDIAL INVESTIGATION APPROACH AND DATA COLLECTION METHODS |
| Fish/Shellfish [2] | 1) Identify fish/shellfish species present and affinity for Vince Bayou and Little Vince Bayou near AOI-1.<br>2) Concentrations of COPCs in fish/shellfish tissue attributable to AOI-1 sources.<br>3) Assess the potential for fish/shellfish consumption in the area. | 1) Source data (concentrations of COPCs, source type, etc.).<br>2) Historical information on releases from AOI-1.<br>3) Surface runoff patterns at AOI-1 to off-property areas, including surface water.<br>4) Nature and extent of COPCs in on-property and off-property soil.<br>5) COPC concentration data from samples of surface water, sediment and fish/shellfish.<br>6) Fish/shellfish advisories and associated data.<br>7) Other data from trustees. | 1) Identify ongoing and/or historic spills/releases that have or have the potential to impact fish/shellfish.<br>2) Collect data necessary to characterize aquatic conditions relative to fish in Vince Bayou and Little Vince Bayou (e.g., fish/shellfish species present, property fidelity, prey items, etc.).<br>3) If necessary based on iterative approach to characterization, collect fish/shellfish samples for analysis of AOI-1 COPCs. | 1) Refine property COPC list by evaluating source area, soil and groundwater sample data.<br>2) Identify fish/shellfish species present and affinity for property.<br>3) Collect fish/shellfish samples in Vince Bayou and Little Vince Bayou for analysis of AOI-1 COPCs, if warranted.<br>4) Evaluate potential for AOI-1 to contribute COPCs to fish/shellfish tissue in Vince Bayou above background concentrations measured in fish from Little Vince Bayou and upstream in Vince Bayou. |

**TABLE 1**
**DATA NEEDS SUMMARY**
**USOR SUPERFUND SITE – USOR PROPERTY – AREA OF INVESTIGATION 1**

| PRELIMINARY CONCEPTUAL PROPERTY MODEL POTENTIAL EXPOSURE MEDIUM[(1)] | ITERATIVE DATA NEED | APPROACH TO FILL DATA NEED | | |
|---|---|---|---|---|
| | | EXISTING DATA REVIEWED | REMEDIAL INVESTIGATION ACTIVITY | REMEDIAL INVESTIGATION APPROACH AND DATA COLLECTION METHODS |
| General Data Needs | 1) Collect qualitative data needed to support risk assessments such as the presence of T&E species, land use in the vicinity, receptor survey and use restrictions at AOI-1.<br>2) Identify potential preferential subsurface migration pathways.<br>3) Identify vegetative cover.<br>4) Identify climate patterns.<br>5) Identify land use within the watershed sub-basin.<br>6) Assess the potential for flooding.<br>7) Identify historic property ownership and use.<br>8) Assess the presence and quality of ecological habitat.<br>9) Identify any restrictive covenants on-property | | | 1) Contact TPWD to determine potential presence of T&E species in the vicinity.<br>2) Contact the City of Pasadena Engineering Department to obtain a map of all subsurface utilities in the vicinity of AOI-1. In addition, contact the pipeline companies that operate subsurface pipelines in on-property and adjacent properties.<br>3) Assess the erosion potential of soils, which could create off-property impacts, extending to Vince Bayou.<br>4) Understand precipitation, prevailing wind direction, and assess how these parameters could impact mobilization of COPCs.<br>5) Obtain a current aerial photograph and access information from the City of Pasadena to obtain zoning information to define land use.<br>6) Obtain floodplain maps from FEMA to delineate the 100-year floodplain.<br>7) Establish historic property ownership and use through obtaining a chain-of-title and historic documents, extending back to a date, prior to property development.<br>8) Perform a reconnaissance and use public data to identify ecological habitats.<br>9) Evaluate property record to identify any restrictive covenants on-property. |

See table notes on following page.

**TABLE 1**
**DATA NEEDS SUMMARY**
**USOR SUPERFUND SITE – USOR PROPERTY – AREA OF INVESTIGATION 1**

Notes:
1) Refer to Exposure Medium column on Figure 1 for human health receptors and on Figure 2 for ecological receptors.
2) Sampling of these media to be performed in conjunction with appropriate background sampling, if necessary.
3) Color coding per Figures 1 and 2, as follows:

| |
|---|
| Green – Primary media to be sampled during initial stage of RI/FS. |
| Blue – Second iteration media to be sampled based on primary media sample data. |
| Pink – Third iteration media to be sampled based on primary media and second iteration media sample data. |
| Yellow – For human health risk assessment, exposure medium concentration will be estimated using primary media sample concentrations. |

**Table 2 - USOR Area of Investigation 1**
**Metals Concentrations in Soil Samples**

| Location | Sample ID | Sample Date | Aluminum (mg/kg) | Antimony (mg/kg) | Arsenic (mg/kg) | Barium (mg/kg) | Beryllium (mg/kg) | Cadmium (mg/kg) | Chromium (mg/kg) | Cobalt (mg/kg) | Copper (mg/kg) | Lead (mg/kg) | Manganese (mg/kg) | Mercury (mg/kg) | Nickel (mg/kg) | Selenium (mg/kg) | Silver (mg/kg) | Vanadium (mg/kg) | Zinc (mg/kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| March 2011 EPA START-3 Sampling Event (HRS, p. 14, Reference 44) | | | | | | | | | | | | | | | | | | | |
| SS-01 | SS-01-03-51 | 03/01/11 | 11000 | <1.5J | 5.9J | 117 | <0.75J | <0.75J | 15.2J | 4.2J | 19.3J | 53.3J | 83.4J | 0.21 | 9.8J | <3.7 | <0.75 | 17.1J | 106J |
| SS-02 | SS-02-03-51 | 03/01/11 | 21800 | <1.3J | 11.9J | 198 | <1.3J | <0.65J | 17.2J | 6.7J | 9J | 24.7J | 345J | 0.12J | 12.3J | <6.5 | <0.65 | 29.1J | 25.5J |
| SS-03 | SS-03-03-51 | 03/01/11 | 20800 | <1.3J | 205J | 402 | <3.3J | <0.67J | 30.1J | 19.1J | 15.9J | 38.3J | 1170J | 0.15 | 21.5J | <16.7 | <0.67 | 48.3J | 37.2J |
| SS-03 | SS-03-03-52 | 03/01/11 | 18700 | <1.3J | 464J | 718 | <13.1J | <0.65J | 40.8J | 57.7J | <26.2J | 58.1J | 3600J | 0.16 | 30.9J | <65.4 | <0.65 | 65.9J | 36.3J |
| SS-04 | SS-04-03-51 | 03/01/11 | 8700 | 1.8J | 10.5J | 217 | <0.83J | <0.83J | 13.5J | 3.8J | 14.4J | 37.3J | 240J | <0.12J | 8.9J | <4.2 | <0.83 | 15.1J | 129J |
| SS-05 | SS-05-03-51 | 03/01/11 | 10200 | <1.3J | 2.1J | 117 | <0.66J | <0.66J | 14.6J | 4.3J | 10.8J | 55J | 190J | 0.083J | 7.9J | <3.3 | <0.66 | 16J | 76.7J |
| 2005 TCEQ Investigation (HRS, p.10) (USOR Preliminary Assessment Reference 25) (Sample locations uncertain but are from near the manhole and outfall at the southeast corner of OU-1) | | | | | | | | | | | | | | | | | | | |
| T11590-1 | T11590-1 | 10/7/05 | --- | --- | 29.3 | --- | --- | --- | 34.9 | --- | 22.7 | 36.9 | --- | 0.43 | 19.6 | --- | --- | --- | 312 |
| T11590-2 | T11590-2 | 10/7/05 | --- | --- | 115 | --- | --- | --- | --- | --- | --- | 30.7 | --- | 0.09 | 16.3 | --- | --- | --- | 203 |
| T11590-3 | T11590-3 | 10/7/05 | --- | --- | 55.3 | --- | --- | --- | --- | --- | --- | 27.0 | --- | 0.14 | --- | --- | --- | --- | 122 |
| T11590-4 | T11590-4 | 10/7/05 | --- | --- | 66.5 | --- | --- | --- | 31.0 | --- | 26.7 | 68.9 | --- | 0.35 | 18.3 | --- | --- | --- | 574 |
| T11591-1 (1A) | T11591-1 (1A) | 10/7/05 | --- | --- | 46.3 | 720.0 | --- | --- | 47.4 | --- | 49.2 | 40.8 | --- | 0.20 | 27.0 | --- | --- | --- | 489 |
| T11591-2 (2A) | T11591-2 (2A) | 10/7/05 | --- | --- | 43.4 | 577.0 | --- | --- | 35.8 | --- | 44.5 | 48.8 | --- | 0.18 | 26.1 | --- | --- | --- | 668 |
| T11591-3 (3A) | T11591-3 (3A) | 10/7/05 | --- | --- | 66.6 | 1680.0 | --- | --- | 61.2 | --- | 81.6 | 64.3 | --- | 0.46 | 41.3 | --- | --- | --- | 1010 |
| USOR Letter to TNRCC (TCEQ) regarding remediation efforts related to spill from west side of bioreactor (HRS, p. 10, Reference 5, p. 504) (Preliminary Assessment Reference 30) | | | | | | | | | | | | | | | | | | | |
| A1-1 | A1-1 | 08/31/09 | --- | --- | 6.761 | 76.11 | --- | <0.5 | 7.029 | --- | --- | 13.63 | --- | 0.068 | --- | <0.5 | <0.5 | --- | --- |
| A1-2 | A1-2 | 08/31/09 | --- | --- | 7.614 | 57.26 | --- | <0.5 | 7.855 | --- | --- | 9.468 | --- | 0.167 | --- | <0.5 | <0.5 | --- | --- |
| A1-3 | A1-3 | 08/31/09 | --- | --- | 9.071 | 82.98 | --- | <0.5 | 32.88 | --- | --- | 12.88 | --- | 0.127 | --- | <0.5 | <0.5 | --- | --- |
| A1-4 | A1-4 | 08/31/09 | --- | --- | 28.71 | 67.02 | --- | 0.66 | 7.964 | --- | --- | 12.35 | --- | 0.604 | --- | <0.5 | <0.5 | --- | --- |
| A1-5 | A1-5 | 08/31/09 | --- | --- | 6.34 | 58.72 | --- | <0.5 | 6.831 | --- | --- | 12.72 | --- | 0.088 | --- | <0.5 | <0.5 | --- | --- |
| A1-6 | A1-6 | 08/31/09 | --- | --- | 3.757 | 58.21 | --- | <0.5 | 5.08 | --- | --- | 8.191 | --- | 0.03 | --- | <0.5 | <0.5 | --- | --- |
| A1-7 | A1-7 | 08/31/09 | --- | --- | 0.917 | 151.7 | --- | <0.5 | 4.078 | --- | --- | 7.497 | --- | 0.013 | --- | <0.5 | <0.5 | --- | --- |
| A1-8 | A1-8 | 08/31/09 | --- | --- | 14.34 | 176.2 | --- | <0.5 | 6.747 | --- | --- | 15.47 | --- | 0.304 | --- | <0.5 | <0.5 | --- | --- |
| A1-9 | A1-9 | 08/31/09 | --- | --- | 2.135 | 214 | --- | <0.5 | 5.151 | --- | --- | 5.997 | --- | 0.025 | --- | <0.5 | <0.5 | --- | --- |
| A1-10 | A1-10 | 08/31/09 | --- | --- | 2.224 | 64.58 | --- | <0.5 | 14.44 | --- | --- | 12.74 | --- | 0.033 | --- | <0.5 | <0.5 | --- | --- |
| A1-11 | A1-11 | 08/31/09 | --- | --- | 1.621 | 202.9 | --- | <0.5 | 14.22 | --- | --- | 7.826 | --- | 0.011 | --- | <0.5 | <0.5 | --- | --- |
| A1-12 | A1-12 | 08/31/09 | --- | --- | 24.57 | 72.81 | --- | <0.5 | 9.942 | --- | --- | 75.9 | --- | 0.165 | --- | <0.5 | <0.5 | --- | --- |
| A1-13 | A1-13 | 08/31/09 | --- | --- | 54.7 | 196.3 | --- | <0.5 | 8.439 | --- | --- | 17.55 | --- | 0.274 | --- | <0.5 | <0.5 | --- | --- |
| A1-14 | A1-14 | 08/31/09 | --- | --- | 9.18 | 88.99 | --- | <0.5 | 8.36 | --- | --- | 38.46 | --- | 0.302 | --- | <0.5 | <0.5 | --- | --- |
| A1-15 | A1-15 | 08/31/09 | --- | --- | 9.947 | 75.52 | --- | <0.5 | 5.714 | --- | --- | 14.45 | --- | 0.57 | --- | <0.5 | <0.5 | --- | --- |
| A1-16 | A1-16 | 08/31/09 | --- | --- | 6.639 | 66.67 | --- | <0.5 | 4.696 | --- | --- | 8.191 | --- | 0.236 | --- | <0.5 | <0.5 | --- | --- |
| A1-17 | A1-17 | 08/31/09 | --- | --- | 2.381 | 59.49 | --- | <0.5 | 4.479 | --- | --- | 7.32 | --- | 0.053 | --- | <0.5 | <0.5 | --- | --- |
| A1-19 | A1-19 | 08/31/09 | --- | --- | 1.296 | 87.16 | --- | <0.5 | 15.63 | --- | --- | 13.72 | --- | 0.015 | --- | <0.5 | <0.5 | --- | --- |
| A1-20 | A1-20 | 08/31/09 | --- | --- | 1.536 | 139.8 | --- | <0.5 | 6.712 | --- | --- | 7.89 | --- | 0.019 | --- | <0.5 | <0.5 | --- | --- |
| A1-4A | A1-4A | 09/28/09 | --- | --- | 4.47 | 159.6 | --- | <0.5 | 9.06 | --- | --- | 2.75 | --- | <0.01 | --- | <0.5 | <0.5 | --- | --- |
| A1-8A | A1-8A | 09/29/09 | --- | --- | 48 | 144.2 | --- | <0.5 | 10.8 | --- | --- | 4.88 | --- | 0.055 | --- | <0.5 | <0.5 | --- | --- |
| A1-12A | A1-12A | 09/30/09 | --- | --- | 28.7 | 73.5 | --- | <0.5 | 11.4 | --- | --- | 9.25 | --- | 1.294 | --- | 0.574 | <0.5 | --- | --- |
| A1-13A | A1-13A | 10/01/09 | --- | --- | 22.6 | 75 | --- | <0.5 | 11.4 | --- | --- | 11 | --- | 0.329 | --- | <0.5 | <0.5 | --- | --- |
| A1-14A | A1-14A | 10/02/09 | --- | --- | 13.1 | 67.5 | --- | <0.5 | 8.67 | --- | --- | 5.09 | --- | <0.01 | --- | <0.5 | <0.5 | --- | --- |

**Table 2 - USOR Area of Investigation 1**
**Metals Concentrations in Soil Samples**

| Location | Sample ID | Sample Date | Aluminum (mg/kg) | Antimony (mg/kg) | Arsenic (mg/kg) | Barium (mg/kg) | Beryllium (mg/kg) | Cadmium (mg/kg) | Chromium (mg/kg) | Cobalt (mg/kg) | Copper (mg/kg) | Lead (mg/kg) | Manganese (mg/kg) | Mercury (mg/kg) | Nickel (mg/kg) | Selenium (mg/kg) | Silver (mg/kg) | Vanadium (mg/kg) | Zinc (mg/kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2003 USOR Letter to TCEQ Regarding Remediation Efforts Related to "Buried Waste Pit" (Preliminary Assessment, Reference 23) | | | | | | | | | | | | | | | | | | | |
| #1, #2, #3 Comp | #1 | 07/23/03 | --- | 0.047 | <0.005 | 1.76 | <0.005 | <0.004 | <0.007 | --- | --- | <0.01 | --- | <0.005 | <0.015 | 0.021 | <0.006 | --- | --- |
| #1, #2, #3 Comp | #2 | 07/23/03 | --- | 0.054 | 0.012 | 1.87 | <0.005 | <0.004 | <0.007 | --- | --- | <0.01 | --- | <0.005 | <0.015 | <0.005 | <0.006 | --- | --- |
| 1991 Espey, Houston & Associates, Phase 2A Environmental Site Assessment (Preliminary Assessment, Ref. 19) | | | | | | | | | | | | | | | | | | | |
| B-1 11-12' | B-1 11-12' | 09/30/91 | --- | --- | 59.6 | --- | --- | --- | --- | --- | 4.7 | --- | --- | --- | --- | --- | --- | --- | --- |
| B-2 11-11.5' | B-2 11-11.5' | 09/30/91 | --- | --- | 180 | --- | --- | --- | --- | --- | 5.4 | --- | --- | --- | --- | --- | --- | --- | --- |
| B-3 12.5-13' | B-3 12.5-13' | 09/30/91 | --- | --- | 6120 | --- | --- | --- | --- | --- | 3.9 | --- | --- | --- | --- | --- | --- | --- | --- |
| 1998 Extra Environmental Inc. Sampling Report for North American Hide Exporters | | | | | | | | | | | | | | | | | | | |
| 1 | 1 | 02/11/98 | --- | --- | 190 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 2 | 2 | 02/11/98 | --- | --- | 120 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 3 | 3 | 02/11/98 | --- | --- | <2.5 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 4 | 4 | 02/11/98 | --- | --- | 95 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 5 | 5 | 02/11/98 | --- | --- | 6.2 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 6 | 6 | 02/11/98 | --- | --- | 180 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 7 | 7 | 02/11/98 | --- | --- | 20 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 8 | 02/11/98 | --- | --- | 36 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 9 | 9 | 02/11/98 | --- | --- | 25 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 10 | 10 | 02/11/98 | --- | --- | 22 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 11 | 11 | 02/11/98 | --- | --- | 33 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 12 | 12 | 02/11/98 | --- | --- | 62 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 13 | 13 | 02/11/98 | --- | --- | 42 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 14 | 14 | 02/11/98 | --- | --- | 2.7 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 15 | 15 | 02/11/98 | --- | --- | 170 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 16 | 16 | 02/11/98 | --- | --- | <2.5 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 17 | 17 | 02/11/98 | --- | --- | 32 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 18 | 18 | 02/11/98 | --- | --- | 21 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 19 | 19 | 02/11/98 | --- | --- | <2.5 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 20 | 20 | 02/11/98 | --- | --- | 120 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |

Notes:
1. --- = No value available for that compound for that sample.
2. < = not detected above reporting limit
3. J = estimated concentration.
4. Not all qualifier flags from original data are included in this table.
5. Only metals detected in at least one soil sample are included in this table.

**Table 3 - USOR Area of Investigation 1**
**Volatile and Semi-Volatile Organic Compound Concentrations in Soil Samples**

| Location | Sample ID | Sample Date | 1,4-Dichlorobenzene (mg/kg) | Benzo (a) anthracene (mg/kg) | Benzo (a) pyrene (mg/kg) | Benzo (b) fluoranthene (mg/kg) | Benzo (g,h,i) perylene (mg/kg) | Benzo (k) fluoranthene (mg/kg) | Chrysene (mg/kg) | Di-n-butylphthalate (mg/kg) | Fluoranthene (mg/kg) | Indeno (1,2,3-cd) pyrene (mg/kg) | Methyl ethyl ketone (mg/kg) | Naphthalene (mg/kg) | Phenanthrene (mg/kg) | Pyrene (mg/kg) | Xylenes (mg/kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| March 2011 EPA START-3 Sampling Event (HRS, p. 14, Reference 44) | | | | | | | | | | | | | | | | | |
| SS-01 | SS-01-03-51 | 3/1/2011 | <0.0051 | <0.767 | 1.32 | 1.68 | 1.36 | 0.98 | 1.31 | <0.767 | 1.54 | 1.17 | <0.0051 | <0.307 | 0.425 | 1.56 | <0.0051 |
| SS-02 | SS-02-03-51 | 3/1/2011 | <0.005 | <0.66 | <0.66 | <0.66 | <0.66 | <0.66 | <0.66 | <0.737 | <0.264 | <0.66 | <0.005 | <0.264 | <0.264 | <0.264 | <0.005 |
| SS-03 | SS-03-03-51 | 3/1/2011 | 0.702 | <0.652 | <0.652 | <0.652 | <0.652 | <0.652 | <0.652 | <0.652 | <0.261 | <0.652 | <0.0057 | <0.261 | <0.261 | <0.261 | <0.0057 |
| SS-03 | SS-03-03-52 | 3/1/2011 | 0.986 | <0.646 | <0.646 | <0.646 | <0.646 | <0.646 | <0.646 | <0.652 | <0.258 | <0.646 | <0.0061 | <0.258 | <0.258 | <0.258 | <0.0057 |
| SS-04 | SS-04-03-51 | 3/1/2011 | <0.0057 | <0.784 | <0.784 | <0.784 | <0.784 | <0.784 | <0.784 | <0.784 | 0.668 | <0.784 | <0.0057 | <0.313 | <0.313 | 0.784 | <0.0057 |
| SS-05 | SS-05-03-51 | 3/1/2011 | <0.662 | 1.15 | 1.68 | 1.99 | 1.46 | 1.26 | 1.69 | <0.662 | 2.64J | 1.21 | <0.005 | <0.265 | 0.813J | 2.66 | <0.005 |
| USOR Letter to TNRCC (TCEQ) regarding remediation efforts related to spill from west side of bioreactor (HRS, p. 10, Reference 5, p. 504) (Preliminary Assessment Reference 30) | | | | | | | | | | | | | | | | | |
| A1-1 | A1-1 | 8/31/2009 | <0.005 | <3.33 | <3.33 | <3.33 | <4 | <3.33 | <3.33 | <3.33 | <3.33 | <3.33 | 1.24 | 0.0059 | <3.33 | <3.33 | <0.005 |
| A1-2 | A1-2 | 8/31/2009 | <0.005 | <3.33 | <3.33 | <3.33 | <4 | <3.33 | <3.33 | <3.33 | <3.33 | <3.33 | <0.005 | 0.0074 | <3.33 | <3.33 | <0.005 |
| A1-3 | A1-3 | 8/31/2009 | <0.005 | <3.33 | <3.33 | <3.33 | <4 | <3.33 | <3.33 | <3.33 | <3.33 | <3.33 | <0.005 | <0.005 | <3.33 | <3.33 | <0.005 |
| A1-4 | A1-4 | 8/31/2009 | <0.005 | <3.33 | <3.33 | <3.33 | <4 | <3.33 | <3.33 | <3.33 | <3.33 | <3.33 | <0.005 | <0.005 | <3.33 | <3.33 | <0.005 |
| A1-5 | A1-5 | 8/31/2009 | <0.005 | <3.33 | <3.33 | <3.33 | <4 | <3.33 | <3.33 | <3.33 | <3.33 | <3.33 | <0.005 | <0.005 | <3.33 | <3.33 | <0.005 |
| A1-6 | A1-6 | 8/31/2009 | <0.005 | <3.33 | <3.33 | <3.33 | <4 | <3.33 | <3.33 | <3.33 | <3.33 | <3.33 | <0.005 | <0.005 | <3.33 | <3.33 | <0.005 |
| A1-7 | A1-7 | 8/31/2009 | <0.005 | <3.33 | <3.33 | <3.33 | <4 | <3.33 | <3.33 | <3.33 | <3.33 | <3.33 | <0.005 | <0.005 | <3.33 | <3.33 | <0.005 |
| A1-8 | A1-8 | 8/31/2009 | <0.005 | <3.33 | <3.33 | <3.33 | <4 | <3.33 | <3.33 | <3.33 | <3.33 | <3.33 | <0.005 | <0.005 | <3.33 | <3.33 | <0.005 |
| A1-9 | A1-9 | 8/31/2009 | <0.005 | <3.33 | <3.33 | <3.33 | <4 | <3.33 | <3.33 | <3.33 | <3.33 | <3.33 | <0.005 | <0.005 | <3.33 | <3.33 | <0.005 |
| A1-10 | A1-10 | 8/31/2009 | <0.005 | <3.33 | <3.33 | <3.33 | <4 | <3.33 | <3.33 | <3.33 | <3.33 | <3.33 | <0.005 | <0.005 | <3.33 | <3.33 | <0.005 |
| A1-11 | A1-11 | 8/31/2009 | <0.005 | <3.33 | <3.33 | <3.33 | <4 | <3.33 | <3.33 | <3.33 | <3.33 | <3.33 | <0.005 | <0.005 | <3.33 | <3.33 | <0.005 |
| A1-12 | A1-12 | 8/31/2009 | <0.005 | <3.33 | <3.33 | <3.33 | <4 | <3.33 | <3.33 | <3.33 | <3.33 | <3.33 | <0.005 | <0.005 | <3.33 | <3.33 | <0.005 |
| A1-13 | A1-13 | 8/31/2009 | <0.005 | <3.33 | <3.33 | <3.33 | <4 | <3.33 | <3.33 | <3.33 | <3.33 | <3.33 | <0.005 | <0.005 | <3.33 | <3.33 | <0.005 |
| A1-14 | A1-14 | 8/31/2009 | <0.005 | <3.33 | <3.33 | <3.33 | <4 | <3.33 | <3.33 | <3.33 | <3.33 | <3.33 | <0.005 | <0.005 | <3.33 | <3.33 | <0.005 |
| A1-15 | A1-15 | 8/31/2009 | <0.005 | <3.33 | <3.33 | <3.33 | <4 | <3.33 | <3.33 | <3.33 | <3.33 | <3.33 | <0.005 | <0.005 | <3.33 | <3.33 | <0.005 |
| A1-16 | A1-16 | 8/31/2009 | <0.005 | <3.33 | <3.33 | <3.33 | <4 | <3.33 | <3.33 | <3.33 | <3.33 | <3.33 | <0.005 | <0.005 | <3.33 | <3.33 | <0.005 |
| A1-17 | A1-17 | 8/31/2009 | <0.005 | <3.33 | <3.33 | <3.33 | <4 | <3.33 | <3.33 | <3.33 | <3.33 | <3.33 | <0.005 | <0.005 | <3.33 | <3.33 | <0.005 |
| A1-19 | A1-19 | 8/31/2009 | <0.005 | <3.33 | <3.33 | <3.33 | <4 | <3.33 | <3.33 | <3.33 | <3.33 | <3.33 | <0.005 | <0.005 | <3.33 | <3.33 | <0.005 |
| A1-20 | A1-20 | 8/31/2009 | <0.005 | <3.33 | <3.33 | <3.33 | <4 | <3.33 | <3.33 | <3.33 | <3.33 | <3.33 | <0.005 | <0.005 | <3.33 | <3.33 | <0.005 |
| 1991 Espey, Houston & Associates, Phase 2A Environmental Site Assessment (Preliminary Assessment, Ref. 19) | | | | | | | | | | | | | | | | | |
| B-1 | B-1 11-12' | 9/30/1991 | <2.18 | <2.18 | <2.18 | <2.18 | <2.18 | <2.18 | <2.18 | 2.9 | <2.18 | <2.18 | --- | <2.18 | <2.18 | <2.18 | <0.005 |
| B-2 | B-2 11-11.5' | 9/30/1991 | <2.18 | <2.18 | <2.18 | <2.18 | <2.18 | <2.18 | <2.18 | 7.8 | <2.18 | <2.18 | --- | <2.18 | <2.18 | <2.18 | <0.005 |
| B-3 | B-3 12.5-13' | 9/30/1991 | <2.18 | <2.18 | <2.18 | <2.18 | <2.18 | <2.18 | <2.18 | 6.4 | <2.18 | <2.18 | --- | <2.18 | <2.18 | <2.18 | 0.028 |

Notes:
1. --- = No value available for that compound for that sample.
2. < = not detected above reporting limit
3. J = estimated concentration.
4. Not all qualifier flags from original data are included in this table.
5. Only compounds detected in at least one soil sample are included in this table.

**Table 4 - USOR Area of Investigation 1**
**Pesticide Concentrations in Soil Samples**

| Location | Sample ID | Sample Depth (ft below grade) | Aldrin (mg/kg) | alpha-BHC (mg/kg) | beta-BHC (mg/kg) | delta-BHC (mg/kg) | gamma-BHC (mg/kg) | 4,4'-DDD (mg/kg) | 4.4'-DDE (mg/kg) | 4,4'-DDT (mg/kg) | Dieldrin (mg/kg) | Endosulfan Sulfate (mg/kg) | Endrin (mg/kg) | Endrin Aldehyde (mg/kg) | Methoxychlor (mg/kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1991 Espey, Houston & Associates, Phase 2A Environmental Site Assessment (Preliminary Assessment, Ref. 19) | | | | | | | | | | | | | | | |
| B-1 | B-1 11-12' | 11/12/13 | <0.0027 | <0.002 | <0.004 | <0.006 | <0.0027 | <0.0074 | <0.0024 | <0.008 | <0.0013 | <0.0442 | <0.004 | <0.0154 | <0.118 |
| B-2 | B-2 11-11.5' | 11-11.5 | 0.0047 | 0.024 | 0.0158 | <0.006 | <0.0027 | 0.0094 | 0.0037 | 0.0211 | <0.0013 | <0.0442 | <0.004 | <0.0154 | <0.118 |
| B-3 | B-3 12.5-13' | 12.5-13 | <0.070 | <0.05 | 1.2 | 0.37 | <0.07 | 3.8 | 2.6 | 8.7 | 1.7 | 4.6 | 8.2 | 4.2 | 8.4 |

Notes:
1. --- = No value available for that compound for that sample.
2. < = not detected above reporting limit
3. J = estimated concentration.
4. Not all qualifier flags from original data are included in this table.
5. Only compounds detected in at least one soil sample are included in this table.

**Table 5 - USOR Area of Investigation 1**
**Metals and Pesticides Concentrations in Groundwater Samples**

| Location | Sample ID | Date Sampled | Arsenic (mg/L) | Copper (mg/L) | alpha-BHC (mg/kg) | beta-BHC (mg/kg) | delta-BHC (mg/kg) | gamma-BHC (mg/kg) |
|---|---|---|---|---|---|---|---|---|
| 1991, Espey, Houston & Associates (Preliminary Asssessment, Ref. 19) | | | | | | | | |
| B-1 | B-1 | 9/30/1991 | 5.77 | 0.17 | 0.00008 | 0.00022 | <0.006 | 0.00004 |

Notes:

1. < = not detected above reporting limit

2. Only compounds detected in at least one sample are included in this table.

**Table 6 - USOR Area of Investigation 1**
**Metals Concentrations in Surface Water Samples**
**2011 Data**

| Location | Sample ID | Date Sampled | Aluminum (mg/L) | Antimony (mg/L) | Arsenic (mg/L) | Barium (mg/L) | Beryllium (mg/L) | Cadmium (mg/L) | Chromium (mg/L) | Cobalt (mg/L) | Copper (mg/L) | Iron (mg/L) | Lead (mg/L) | Magnesium (mg/L) | Manganese (mg/L) | Mercury (mg/L) | Nickel (mg/L) | Potassium (mg/L) | Selenium (mg/L) | Silver (mg/L) | Vanadium (mg/L) | Zinc (mg/L) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **March 2011 EPA START-3 Sampling Event (HRS, p. 14, Reference 44)** | | | | | | | | | | | | | | | | | | | | | | |
| PPE-01 | PPE-01-00-11-20110303 | 3-Mar-11 | 0.426 J | <0.002 | 0.0158 J | 0.0704 | <0.001 | <0.001 | 0.004 J | <0.001 | 0.002 J | 0.211 | 0.0018 J | 229 | 0.0336 | <0.0002 | 0.0045 | 82.3 | <0.005 | <0.001 | 0.0009 J | 0.0172 J |
| PPE-02 | PPE-02-00-11-20110303 | 3-Mar-11 | 0.284 J | <0.002 | 0.0191 J | 0.0655 J | <0.001 | <0.001 | 0.0033 J | <0.001 | 0.0024 J | <0.2 | <0.002 | 280 | 0.0338 | <0.0002 | 0.0036 J | 97 | <0.005 | <0.001 | <0.005 | 0.0128 J |
| PPE-03 | PPE-03-00-11-20110302 | 2-Mar-11 | <0.02 | <0.002 | 0.0192 J | 0.0789 | <0.001 | <0.001 | 0.004 J | <0.001 | <0.002 | 0.202 | <0.001 | 260 J | 0.0429 | <0.0002 | 0.0042 | 90.4 J | <0.005 | <0.001 | <0.005 | 0.0131 J |
| PPE-04 | PPE-04-00-11-20110302 | 2-Mar-11 | <0.02 | <0.002 | 0.0188 J | 0.0917 | <0.001 | <0.001 | 0.0039 J | <0.001 | <0.002 | 0.0977 J | <0.001 | 285 | 0.0453 | <0.0002 | 0.0042 | 95 J | 0.0054J | <0.001 | 0.0012 J | 0.0098 J |
| PPE-05 | PPE-05-00-11-20110301 | 1-Mar-11 | <0.02 | <0.002 | 0.0192 J | 0.0688 | <0.001 | <0.001 | 0.0032 J | <0.001 | <0.002 | 0.141 J | <0.001 | 258 J | 0.0469 | <0.0002 | 0.0039 | 89 J | 0.0105J | <0.001 | <0.0024 | 0.0142 J |
| PPE-06 | PPE-06-00-11-20110301 | 1-Mar-11 | <0.02 | <0.002 | 0.0191 J | 0.0695 | <0.001 | <0.001 | <0.002 | <0.001 | <0.002 | 0.171 J | <0.001 | 232 | 0.0465 | <0.0002 | 0.0041 | 81 | 0.0087J | <0.001 | 0.0015 J | 0.0149 J |
| SED-01 | BG-01-00-11-20110303 | 3-Mar-11 | 0.069 J | <0.004 | 0.021 J | 0.0582 J | <0.002 | <0.001 | <0.004 | <0.002 | <0.004 | <0.4 | <0.002 | 240 | 0.0352 | <0.0002 | <0.002 | 85.5 | <0.01 | <0.001 | <0.01 | 0.0201 J |
| SED-02 | BG-02-00-11-20110301 | 1-Mar-11 | <0.02 | <0.002 | 0.0149 J | 0.0728 | <0.001 | <0.001 | <0.002 | <0.001 | <0.002 | 0.16 J | 0.0016 J | 264 | 0.0426 | <0.0002 | 0.0039 | 89.8 | <0.005 | 0.0017 J | 0.0027 J | 0.0141 J |
| SW-01 | SW-01-00-11-20110302 | 2-Mar-11 | <0.02 | <0.002 | 0.02 J | 0.0768 | <0.001 | <0.001 | 0.0043 J | <0.001 | <0.002 | 0.16 J | <0.001 | 256 | 0.0381 | <0.0002 | 0.0041 | 88.9 | <0.005 | <0.001 | 0.002 J | 0.0139 J |
| SW-02 | SW-02-00-11-20110302 | 2-Mar-11 | <0.02 | <0.002 | 0.0189 J | 0.0738 | <0.001 | <0.001 | 0.0042 J | <0.001 | <0.002 | 0.121 J | 0.001 | 267 | 0.0372 | <0.0002 | 0.0042 | 92.6 | <0.005 | <0.001 | 0.00016 J | 0.0125 J |
| SW-03 | SW-03-00-11-20110303 | 3-Mar-11 | 1.42 | <0.002 | 0.0169 J | 0.083 | <0.001 | <0.001 | 0.006 J | 0.0018J | 0.0058 J | 1.24 | 0.016 | 245 | 0.0786 | <0.0002 | 0.0055 | 86.5 | <0.005 | <0.001 | 0.0038 J | 0.0347 J |
| SW-04 | SW-04-00-11-20110303 | 3-Mar-11 | 0.466 | <0.002 | 0.0148 J | 0.0687 | <0.001 | <0.001 | 0.0041 J | <0.001 | 0.002 J | 0.247 | 0.0025 | 230 | 0.0344 | <0.0002 | 0.0041 | 82.5 | <0.005 | <0.001 | 0.00021 J | 0.0152 J |
| SW-05 | SW-05-00-11-20110303 | 3-Mar-11 | 0.118 J | <0.002 | 0.018 J | 0.0612 J | <0.001 | <0.001 | 0.0029 J | <0.001 | 0.0035 J | <0.2 | <0.002 | 232 | 0.0314 | <0.0002 | 0.0038 J | 82.3 | <0.005 | <0.001 | <0.005 | 0.015 J |
| SW-06 | SW-06-00-11-20110302 | 2-Mar-11 | 0.277 | <0.002 | 0.0143 J | 0.0486 | <0.001 | <0.001 | 0.0033 J | <0.001 | 0.0012 J | 0.0686 J | <0.001 | 121 | 0.0235 | <0.0002 | 0.0035 | 50.6 | <0.005 | <0.001 | <0.005 | 0.0185 J |
| SW-07 | SW-07-00-11-20110303 | 3-Mar-11 | 0.306 | <0.002 | 0.0132 J | 0.0518 | <0.001 | <0.001 | <0.002 | <0.001 | 0.0014 J | 0.0986 J | 0.001 | 139 | 0.0247 | <0.0002 | 0.0038 | 55.8 | <0.005 | <0.001 | 0.00042 J | 0.0188 J |
| SW-08 | SW-08-00-11-20110303 | 3-Mar-11 | 0.152 J | <0.002 | 0.0159 J | 0.0533 J | <0.001 | <0.001 | 0.0028 J | <0.001 | 0.0016 J | <0.2 | <0.002 | 169 | 0.0261 | <0.0002 | 0.0032 J | 75.1 | <0.005 | <0.001 | <0.005 | 0.0131 J |
| SW-09 | SW-09-00-11-20110302 | 2-Mar-11 | <0.02 | <0.002 | 0.0189 J | 0.092 | <0.001 | <0.001 | 0.0037 J | <0.001 | <0.002 | 0.0942 J | <0.001 | 288 J | 0.0445 | <0.0002 | 0.0042 | 94.7 J | 0.0057J | <0.001 | 0.00065 J | 0.0091 J |
| SW-10 | SW-10-00-11-20110302 | 2-Mar-11 | <0.02 | <0.002 | 0.0185 J | 0.0617 | <0.001 | <0.001 | 0.0032 J | <0.001 | <0.002 | 0.0932 J | <0.001 | 229 J | 0.0334 | <0.0002 | 0.0037 | 80.8 J | 0.0064J | <0.001 | 0.0016 J | 0.0147 J |
| SW-11 | SW-11-00-11-20110301 | 1-Mar-11 | <0.02 | <0.002 | 0.0168 J | 0.0662 | <0.001 | <0.001 | <0.002 | <0.001 | <0.002 | 0.101 J | <0.001 | 217 | 0.0427 | <0.0002 | 0.0039 | 78.3 | 0.0067 | <0.001 | 0.0021 J | 0.014 J |

Notes:
1. All surface water samples from Vince Bayou are included on this table, regardless of their location relative to Operable Unit 1 or Operable Unit 2.
2. Samples SED-01 and SED-02 were collected at background locations
3. J = estimated concentration.
4. < = not detected above reporting limit.
5. Not all qualifier flags from original data are included in this table.
6. Only compounds detected in at least one sample are included in this table.

**Table 7 - USOR Area of Investigation 1**
**Metals Concentrations in Sediment Samples**
**2011 Data**

| Location | Sample ID | Sample Date | Aluminum (mg/kg) | Arsenic (mg/kg) | Barium (mg/kg) | Beryllium (mg/kg) | Cadmium (mg/kg) | Calcium (mg/kg) | Chromium (mg/kg) | Cobalt (mg/kg) | Copper (mg/kg) | Iron (mg/kg) | Lead (mg/kg) | Magnesium (mg/kg) | Manganese (mg/kg) | Mercury (mg/kg) | Nickel (mg/kg) | Potassium (mg/kg) | Selenium (mg/kg) | Silver (mg/kg) | Sodium (mg/kg) | Vanadium (mg/kg) | Zinc (mg/kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| March 2011 EPA START-3 Sampling Event (HRS, p.14, Reference 44) | | | | | | | | | | | | | | | | | | | | | | | |
| PPE-01 | PPE-01-03-51 | 3/3/2011 | 9620 | 10.3J | 103 | 0.67U | 0.67U | 20000 | 20.4J | 4J | 13.6J | 11300J | 76.3 | 3080 | 164J | 0.35 | 7.2J | 1530 | 3.4 UJ | 1 | 1870 | 17.1J | 71J |
| PPE-02 | PPE-02-03-51 | 3/3/2011 | 12800 | 4.7J | 115 | 0.79U | 0.79U | 8820 | 24.9J | 5.6J | 22.7J | 13200J | 120 | 3930 | 155J | 0.32 | 13J | 2040 | 7.9 UJ | 2.3 | 2180 | 18.5J | 118J |
| PPE-03 | PPE-03-03-51 | 3/2/2011 | 8550 | 2.2J | 78.6 | 0.85UJ | 1.1J | 17200 | 14.4J | 3.4J | 15.5J | 10000 | 57.3J | 3140 | 74.3J | 0.11J | 7.3J | 1620 | --- | 1.1 | 2490J | 13.7J | 112J |
| PPE-04 | PPE-04-03-51 | 3/2/2011 | 7480 | 2J | 85.2 | 0.72UJ | 0.72UJ | 18000 | 14J | 4.6J | 13.9J | 9740 | 32J | 2790 | 94.1J | 0.064J | 7.8J | 1420 | --- | 0.72U | 2070J | 16J | 76.3J |
| PPE-05 | PPE-05-03-51 | 3/2/2011 | 13300 | 2.4J | 96.4 | 0.95UJ | 0.95UJ | 28900 | 17.2J | 4.8J | 18.7J | 13600 | 41.2J | 4390 | 123J | 0.13J | 10.3J | 2430 | --- | 0.95U | 3080J | 18.7J | 116J |
| PPE-06 | PPE-06-03-51 | 3/2/2011 | 10500 | 2.6J | 102 | 0.88UJ | 0.88UJ | 32700 | 16.4J | 4.5J | 17.7J | 12000 | 34.8J | 3830 | 118J | 0.051J | 8.6J | 1920 | --- | 0.88U | 2080J | 17.7J | 101J |
| SED-01 | BG-01-03-51 | 3/3/2011 | 16900 | 2.3J | 196 | 0.81J | 0.65U | 133000 | 12.4J | 4.3J | 5.9J | 15200J | 10.3 | 6330 | 148J | 0.0083J | 9.5J | 2970 | 3.3 UJ | 0.65U | 1440 | 20.1J | 16.9J |
| SED-02 | BG-02-03-51 | 3/2/2011 | 10100 | 2.3J | 81 | 0.7UJ | 0.7UJ | 25200 | 16.2J | 4.3J | 16.7J | 12600 | 50.5J | 3630 | 158J | 0.076J | 7.8J | 1880 | --- | 0.7U | 2120J | 16.1J | 74J |
| SW-01 | SED-01-03-51 | 3/2/2011 | 9760 | 13.1J | 117 | 0.82UJ | 0.82UJ | 34100 | 18.9J | 5.7J | 15.7J | 13700 | 106J | 3420 | 215J | 0.15J | 8.9J | 1710 | --- | 0.82U | 2600J | 20J | 103J |
| SW-02 | SED-02-03-51 | 3/2/2011 | 18900 | 11.8J | 150 | 0.93J | 0.68UJ | 29200 | 13.1J | 4.9J | 5.2J | 16400 | 15.6J | 4140 | 113J | 0.92 | 7.6J | 2230 | --- | 0.68U | 2020J | 21.2J | 16.6J |
| SW-03 | SED-03-03-51 | 3/2/2011 | 14400 | 5.9J | 114 | 0.87U | 0.87U | 18200 | 19.9J | 4.7J | 21.7J | 14000J | 64.4 | 4550 | 91.8J | 0.32 | 10.8J | 2360 | 4.4 UJ | 1.7 | 2460 | 19.9J | 118J |
| SW-04 | SED-04-03-51 | 3/3/2011 | 6310 | 19.3J | 109 | 0.67U | 0.67U | 9000 | 15.8J | 3.4J | 10.4J | 6030J | 57.5 | 1770 | 83.8J | 1.8 | 6.5J | 997 | 3.4 UJ | 0.7 | 982 | 17.4J | 30.6J |
| SW-05 | SED-05-03-51 | 3/3/2011 | 8000 | 1.3J | 62 | 0.74U | 0.74U | 6880 | 11.4J | 2J | 9.7J | 8650J | 38.4 | 2280 | 71J | 0.13J | 5.5J | 1260 | 3.7 UJ | 0.74U | 1790 | 9.8J | 65.9J |
| SW-06 | SED-06-03-51 | 3/3/2011 | 7700 | 4J | 86.7 | 0.6U | 0.6U | 137000 | 15.9J | 3.8J | 12.2J | 11600J | 57.1 | 4620 | 305J | 0.075J | 9J | 1080 | 6 UJ | 0.6U | 1470 | 13.9J | 132J |
| SW-07 | SED-07-03-51 | 3/3/2011 | 10800 | 2.4J | 89 | 0.69U | 0.69U | 16000 | 17J | 5J | 11.8J | 12800J | 55 | 4070 | 203J | 0.14 | 9.4J | 1760 | 3.5 UJ | 0.92 | 1270 | 17.7J | 87.4J |
| SW-08 | SED-08-03-51 | 3/3/2011 | 17100 | 2.9J | 291 | 1.1J | 0.9 | 8890 | 40.6J | 5.8J | 45.3J | 16200J | 196 | 5640 | 116J | 0.81 | 17J | 2630 | 8.2 UJ | 7.9 | 2220 | 23.9J | 160J |
| SW-09 | SED-09-03-51 | 3/2/2011 | 12800 | 2.2J | 110 | 0.74J | 0.69UJ | 19900 | 21.1J | 4.4J | 14.8J | 14600 | 122J | 4330 | 106J | 0.33 | 10.1J | 2190 | --- | 1.8 | 2220J | 18.8J | 114J |
| SW-10 | SED-10-03-51 | 3/2/2011 | 15400 | 5.9J | 178 | 3.4UJ | 0.68UJ | 3740 | 19.6J | 26.7J | 9.5J | 17400 | 30.1J | 2450 | 1030J | 0.013J | 14.1J | 1740 | --- | 0.68U | 1770J | 48.7J | 13.5J |
| SW-11, PPE-06A | SED-11-03-51 | 3/2/2011 | 2630 | 2.3J | 41.7 | 0.64UJ | 0.64UJ | 137000 | 23.4J | 1.6J | 8.1J | 5640 | 9.8J | 9770 | 310J | 0.027J | 4.5J | 639U | --- | 0.64U | 1160J | 15J | 40.1J |

Notes:
1. All sediment samples from Vince Bayou are included on this table, regardless of their location relative to Operable Unit 1 or Operable Unit 2.
2. Samples SED-01 and SED-02 were collected at background locations
3. J = estimated concentration.
4. < or U = not detected above reporting limit.
5. Not all qualifier flags from original data are included in this table.
6. Only compounds detected in at least one sample are included in this table.

**Table 8 - USOR Area of Investigation 1**
**Volatile and Semi-Volatile Organic Compound Concentrations in Sediment Samples**

| Location | Sample ID | Sample Date | Anthracene (mg/kg) | Benzo (a) anthracene (mg/kg) | Benzo (a) pyrene (mg/kg) | Benzo (b) fluoranthene (mg/kg) | Benzo (g,h,i) perylene (mg/kg) | Benzo (k) fluoranthene (mg/kg) | Bis (2-ethylhexyl) phthalate (mg/kg) | Carbon disulfide (mg/kg) | Chlorobenzene (mg/kg) | Chrysene (mg/kg) | Dibenz (a,h) anthracene (mg/kg) | Di-n-octyl phthalate (mg/kg) | Fluoranthene (mg/kg) | Fluorene (mg/kg) | Indeno (1,2,3-cd) pyrene (mg/kg) | Methyl acetate (mg/kg) | 2-Methylnaphthalene (mg/kg) | Naphthalene (mg/kg) | Phenanthrene (mg/kg) | Pyrene (mg/kg) | Toluene (mg/kg) | Xylenes (mg/kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EPA Emergency Response 2011 | | | | | | | | | | | | | | | | | | | | | | | | |
| PPE-01 | PPE-01-03-51 | 3/3/2011 | <0.289 | <0.723 | <0.723 | <0.723 | <0.723 | <0.723 | <0.723 | <0.0982 | <0.0982 | <0.723 | <0.723 | <0.723 | <0.289 | <0.289 | <0.723 | <0.245 | <0.289 | <0.289 | <0.289 | <0.289 | <0.0982 | <0.196 |
| PPE-02 | PPE-02-03-51 | 3/3/2011 | <0.294 | 0.778 | 1.26 | 1.56 | 1.45J | 1.01 | <0.735 | <0.0999 | <0.0999 | 1.17 | <0.735 | <0.735 | 1.58 | <0.294 | 1.1 | <0.25 | <0.294 | <0.294 | 0.428 | 1.54 | <0.0999 | <0.2 |
| PPE-03 | PPE-03-03-51 | 3/2/2011 | <0.309 | 0.934 | 1.24 | 1.49 | 0.892 | 0.982 | 7.45 | 0.146B | <0.1 | 1.27 | <0.772 | <0.772 | 2.28 | <0.309 | <0.772 | <0.25 | <0.309 | <0.309 | 0.318 | 2.43 | <0.1 | <0.2 |
| PPE-04 | PPE-04-03-51 | 3/2/2011 | <0.289 | 0.873 | 1.4 | 1.81 | 0.805 | 1.13 | 1.21 | <0.0991 | <0.0991 | 1.54 | <0.721 | <0.721 | 2.02 | <0.289 | 0.794 | <0.248 | <0.289 | <0.289 | 0.56 | 2.22 | <0.0991 | <0.198 |
| PPE-05 | PPE-05-03-51 | 3/2/2011 | <0.406 | 1.4 | 2.16 | 2.55 | 1.79 | 1.65 | 1.88 | <0.0992 | <0.0992 | 2.43 | <1.01 | <1.01 | 3.15 | <0.406 | 1.59 | <0.248 | 0.544 | 0.416 | 1.25 | 3.71 | <0.0992 | <0.198 |
| PPE-06 | PPE-06-03-51 | 3/2/2011 | <0.332 | 1.29 | 2.01 | 2.41 | 1.57 | 1.62 | 1.95 | <0.0999 | <0.0999 | 2.25 | <0.831 | <0.831 | 2.81 | <0.332 | 1.42 | <0.25 | <0.332 | <0.332 | 0.834 | 3.37 | <0.0999 | <0.2 |
| SED-01 | BG-01-03-51 | 3/3/2011 | <0.252 | <0.629 | <0.629 | <0.629 | <0.629 | <0.629 | <0.629 | <0.099 | <0.099 | <0.629 | <0.629 | <0.629 | <0.252 | <0.252 | <0.629 | <0.248 | <0.252 | <0.252 | <0.252 | <0.252 | <0.099 | <0.198 |
| SED-02 | BG-02-03-51 | 3/2/2011 | <0.278 | 1.16 | 1.74 | 1.9 | 1.37 | 1.39 | <0.694 | <0.0998 | <0.0998 | 1.75 | <0.694 | <0.694 | 2.53 | <0.278 | 1.16 | <0.249 | <0.278 | <0.278 | 0.75 | 2.74 | <0.0998 | <0.2 |
| SW-01 | SED-01-03-51 | 3/2/2011 | <0.278 | 2.05 | 2.82 | 3.04 | 2.27 | 1.99 | 0.904B | <0.0836 | <0.0836 | 3.02 | <0.695 | <0.695 | 4.72 | <0.278 | 2.08 | 0.485 | <0.278 | <0.278 | 1.79 | 4.73 | <0.0836 | <0.167 |
| SW-02 | SED-02-03-51 | 3/2/2011 | <0.267 | <0.668 | <0.668 | <0.668 | <0.668 | <0.668 | <0.668 | <0.0998 | <0.0998 | <0.668 | <0.668 | <0.668 | 0.491 | <0.267 | <0.668 | <0.25 | <0.267 | <0.267 | <0.267 | 0.513 | <0.0998 | <0.2 |
| SW-03 | SED-03-03-51 | 3/2/2011 | <0.279 | 1.2 | 1.69 | 1.94 | 1.36J | 1.62 | <0.699 | <0.1 | <0.1 | 1.65 | <0.699 | <0.699 | 2.67 | <0.279 | 1.27 | <0.25 | <0.279 | <0.279 | 0.741 | 2.19 | <0.1 | 0.2 |
| SW-04 | SED-04-03-51 | 3/3/2011 | <0.268 | <0.669 | <0.669 | <0.669 | <0.669 | <0.669 | <0.669 | <0.0999 | <0.0999 | <0.669 | <0.669 | <0.669 | <0.268 | <0.268 | <0.669 | <0.25 | <0.268 | <0.268 | <0.268 | <0.268 | <0.0999 | <0.2 |
| SW-05 | SED-05-03-51 | 3/3/2011 | <0.263 | 1.62 | 2.5 | 2.93 | 2.1J | 1.86 | <0.657 | <0.0999 | <0.0999 | 2.22 | 0.725 | <0.657 | 3.08 | <0.263 | 1.95 | <0.25 | <0.263 | <0.263 | 0.711 | 3.2 | <0.0999 | <0.2 |
| SW-06 | SED-06-03-51 | 3/3/2011 | <0.241 | <0.603 | 1 | 1.06 | 0.824J | 0.701 | <0.603 | <0.1 | <0.1 | 0.737 | <0.603 | <0.603 | 0.887 | <0.241 | 0.656 | <0.25 | <0.241 | <0.241 | 0.363 | 0.968 | <0.1 | <0.2 |
| SW-07 | SED-07-03-51 | 3/3/2011 | <0.27 | 0.889 | 1.5 | 1.87 | 1.63J | 1.33 | <0.675 | <0.0998 | <0.0998 | 1.44 | <0.675 | <0.675 | 2.01 | <0.27 | 1.41 | <0.25 | <0.27 | <0.27 | 0.579 | 2.19 | <0.0998 | <0.2 |
| SW-08 | SED-08-03-51 | 3/3/2011 | <0.303 | <0.757 | 0.998 | 1.21 | 0.92 | <0.757 | <0.757 | <0.1 | <0.1 | 0.872 | <0.757 | <0.757 | 1.07 | <0.303 | 0.774 | <0.25 | <0.303 | <0.303 | <0.303 | 1.14 | <0.1 | <0.2 |
| SW-09 | SED-09-03-51 | 3/2/2011 | <0.279 | 0.82 | 1.28 | 1.29 | 1.19 | 1.09 | <0.698 | <0.0999 | <0.0999 | 1.22 | <0.698 | <0.698 | 1.63 | <0.279 | 1.09 | <0.25 | <0.279 | <0.279 | 0.424 | 1.53 | <0.0999 | <0.2 |
| SW-10 | SED-10-03-51 | 3/2/2011 | <0.252 | <0.63 | <0.63 | <0.63 | <0.63 | <0.63 | <0.63 | <0.0997 | <0.0997 | <0.63 | <0.63 | <0.63 | <0.252 | <0.252 | <0.63 | <0.249 | <0.252 | <0.252 | <0.252 | <0.252 | <0.0997 | <0.199 |
| SW-11, PPE-06A | SED-11-03-51 | 3/2/2011 | <0.22 | <0.55 | <0.55 | <0.55 | <0.55 | <0.55 | 0.563B | <0.0998 | <0.0998 | <0.55 | <0.55 | <0.55 | <0.22 | <0.22 | <0.55 | <0.25 | <0.22 | <0.22 | <0.22 | <0.22 | <0.0998 | <0.2 |

Notes:
1. All sediment samples from Vince Bayou are included on this table, regardless of their location relative to Operable Unit 1 or Operable Unit 2.
2. Samples SED-01 and SED-02 were collected at background locations
3. J = estimated concentration.
4. < or U = not detected above reporting limit.
5. Not all qualifier flags from original data are included in this table.
6. Only compounds detected in at least one sample are included in this table.

**TABLE 9 – DATA QUALITY OBJECTIVES FOR AOI-1**

| DQO STEP: | Preliminary Conceptual Site Model Exposure Media |
|---|---|
| 1. State the Problem | *Historical information suggests that contamination exists in on-property soil in areas of former operations, and that contaminants may have migrated off-property during unauthorized releases, spills and overland runoff following storm events.* |
| 2. Identify the Goal of the Study | *Conduct an investigation and assess the potential risks posed by releases of chemicals associated with the USOR Property, assess potential human health and ecological risks associated with past USOR property activities, and develop remedial alternatives to address any unacceptable risks.* |
| ***AOI-1 ON-PROPERTY GROUNDWATER*** | |
| 2a. Identify the Principal Study Questions | 1. Do COPCs in groundwater exceed applicable state and federal groundwater quality standards or AOI-1-specific risk-based criteria established for human receptors?<br>2. Do non-aqueous phase liquids (NAPLs) or the potential for NAPL based on COPC concentrations exist in groundwater? |
| 2b. Define Alternative Actions | *The alternative actions that could result from the resolution of the principal study questions are to recommend that portions of the USOR Property i) require no further evaluation or selection of a remedy; or ii) warrant additional assessment or selection of a remedy.* |
| 3. Identify Information Inputs | • Evaluate AOI-1 hydrogeology.<br>• Evaluate concentrations of COPCs in uppermost groundwater-bearing unit.<br>• Perform water well and water use survey of area.<br>• Perform a water well records search within ½-mile of AOI-1. Confirm that nearby properties are provided potable water from the local municipality.<br>• Perform subsurface utility survey to identify obstructions for drilling program and preferential pathways for migration of COPCs.<br>• Identify ongoing and/or historic spills/releases that have or have the potential to impact groundwater.<br>• Evaluate potential for discharge of groundwater to surface water.<br>• Evaluate groundwater data to assess possibility of vapor intrusion (model). |
| 4. Identify the Boundaries of the Study | • The spatial boundaries of the project are the groundwater contained within the USOR Property and any down-gradient groundwater that may have been impacted by on-property groundwater.<br>• The PCSMs show the receptors of potential concern for this pathway.<br>• The sampling unit for groundwater is the entire upper-most groundwater bearing unit when evaluating the potential for vapor intrusion, or point of exposure wells if impacted groundwater discharges to surface water, or lower groundwater units if shown to be impacted. |

**TABLE 9 – DATA QUALITY OBJECTIVES FOR AOI-1**

| **DQO STEP:** | **Preliminary Conceptual Site Model Exposure Media** |
|---|---|
| ***AOI-1 ON-PROPERTY SOIL*** | |
| 2a. Identify the Principal Study Questions | 1. Do COPCs in on-property soil pose an unacceptable risk to human health or ecological receptors?<br>2. Do COPCs in on-property subsurface soil pose an unacceptable risk to human health receptors?<br>3. What are the general soil characteristics to evaluate impact or COPC mobilization or sequestration in soil?<br>4. What is surface runoff drainage patterns at AOI-1? |
| 2b. Define Alternative Actions | *The alternative actions that could result from the resolution of the principal study questions are to recommend that portions of the USOR Property i) require no further evaluation or selection of a remedy; or ii) warrant additional assessment or selection of a remedy.* |
| 3. Identify Information Inputs | • Evaluate lateral and vertical extent of COPCs in samples of AOI-1 surface soil (0 to 0.5 ft bgs), shallow soils (0.5 to 5 ft bgs) and subsurface soil (greater than 5 ft bgs).<br>• Collect general soil chemistry data (pH, TOC, grain size, etc.).<br>• Evaluate topography and preferential surface water drainage pathways.<br>• Identify ongoing and/or historic spills releases that have or have the potential to impact on-property soil. |
| 4. Identify the Boundaries of the Study | • The spatial boundaries of the project are the soil contained within the USOR Property and any topographically lower areas that may have been impacted by surface runoff or direct releases.<br>• The PCSMs show the receptors of potential concern for this pathway.<br>• The sampling unit for soil is 0 to 0.5 feet below ground surface (bgs), 0.5 to 5 ft. bgs, and 5 ft. bgs to the top of the saturated zone. |

**TABLE 9 – DATA QUALITY OBJECTIVES FOR AOI-1**

| | |
|---|---|
| ***AOI-1 ON-PROPERTY SEDIMENT***<br><br>***(SOUTHWEST AREAS OF AOI-1 WHERE SURFACE WATER IS PRESENT FOR THE MAJORITY OF THE YEAR)*** | |
| 2a. Identify the Principal Study Questions | 1. Do COPCs in on-property sediment pose an unacceptable risk to human health or ecological receptors?<br>2. What is the nature of habitat in areas where sediment is present? |
| 2b. Define Alternative Actions | *The alternative actions that could result from the resolution of the principal study questions are to recommend that portions of the USOR Property i) require no further evaluation or selection of a remedy; or ii) warrant additional assessment or selection of a remedy.* |
| 3. Identify Information Inputs | • Identify ongoing and/or historic spills/releases that have or have the potential to impact on-property sediment.<br>• Collect sediment samples from areas of standing water on-property. |
| 4. Identify the Boundaries of the Study | • The spatial boundaries of the project are the sediments contained within the low-lying areas in the southwest portion of the USOR property.<br>• The PCSMs show the receptors of potential concern for this pathway.<br>• The sampling unit for these sediments is the biologically active zone for the areas with water standing for the majority of the year. |
| ***AOI-1 ON-PROPERTY SURFACE WATER***<br><br>***(SOUTHWEST AREAS OF AOI-1 WHERE SURFACE WATER IS PRESENT FOR THE MAJORITY OF THE YEAR)*** | |
| 2a. Identify the Principal Study Questions | 1. Do COPCs in on-property surface water in the southwest portion of the USOR Property pose an unacceptable risk to human health or ecological receptors?<br>2. What is the general chemistry of on-property surface water?<br>3. What is the nature of the habitat in areas where on-property surface water is present? |
| 2b. Define Alternative Actions | *The alternative actions that could result from the resolution of the principal study questions are to recommend that portions of the USOR Property i) require no further evaluation or selection of a remedy; or ii) warrant additional assessment or selection of a remedy.* |
| 3. Identify Information Inputs | • Identify ongoing and/or historic spills/releases that have or have the potential to impact on-property surface water.<br>• Collect data necessary to characterize origin of standing water.<br>• Collect surface water samples in standing water for analysis of COPCs. |

## TABLE 9 – DATA QUALITY OBJECTIVES FOR AOI-1

| | |
|---|---|
| 4. Identify the Boundaries of the Study | • The spatial boundaries of the project are the low-lying area at the southwest portion of the USOR Property with standing water.<br>• The PCSMs show the receptors of potential concern for this pathway.<br>• The sampling unit for surface water is a depth approximately halfway between the surface and the bottom of the standing water. |
| ***ON-PROPERTY AND OFF-PROPERTY AIR*** | |
| 2a. Identify the Principal Study Questions | 1. Do COPCs in on-property and off-property soil or groundwater pose an unacceptable risk to human health via inhalation?<br>2. How do characteristics such as the presence and quality of vegetative cover, soil type and local meteorological data effect on- and off-property air concentrations (outdoor ambient air as well as indoor air)? |
| 2b. Define Alternative Actions | *The alternative actions that could result from the resolution of the principal study questions are to recommend that portions of the USOR Property i) require no further evaluation or selection of a remedy; or ii) warrant additional assessment or selection of a remedy.* |
| 3. Identify Information Inputs | 1. Use on-property soil and groundwater COPC concentration data and AOI-1-specific information to estimate or model potential emissions of volatile organic compounds and fugitive dust in on-property and off-property air. |
| 4. Identify the Boundaries of the Study | • The spatial boundaries of the project are affected area of soil and groundwater.<br>• The PCSMs show the receptors of potential concern for this pathway.<br>• The sampling unit for this pathway will be surface soil for fugitive dust generation, subsurface for VOC emissions and impacted subsurface soil and groundwater for indoor VOC intrusion. |

**TABLE 9 – DATA QUALITY OBJECTIVES FOR AOI-1**

| | |
|---|---|
| ***OFF-PROPERTY SURFACE SOIL*** | |
| 2a. Identify the Principal Study Questions | 1. Do COPCs in off-property soil pose an unacceptable risk to human health or ecological receptors?<br>2. Do COPCs in on-property and off-property soil or groundwater pose an unacceptable risk to human health via inhalation?<br>3. What are the general soil characteristics to evaluate impact or COPC mobilization or sequestration in soil?<br>4. What are surface runoff drainage patterns in the off-property area? |
| 2b. Define Alternative Actions | *The alternative actions that could result from the resolution of the principal study questions are to recommend that portions of the USOR Property i) require no further evaluation or selection of a remedy; or ii) warrant additional assessment or selection of a remedy.* |
| 3. Identify Information Inputs | 1. Evaluate lateral and vertical extent of COPCs in samples of off-property surface soil (0 to 0.5 ft bgs), shallow soils (0.5 to 5 ft bgs) and subsurface soil (greater than 5 ft bgs), depending on the nature of the soil area being investigated..<br>2. Collect general soil chemistry data (pH, TOC, grain size, etc.).<br>3. Evaluate topography and preferential surface water drainage pathways.<br>4. Identify ongoing and/or historic spills releases that have or have the potential to impact off-property soil. |
| 4. Identify the Boundaries of the Study | • The spatial boundaries of the project are the off-property soil outside of the USOR property extending to Vince Bayou.<br>• The PCSMs show the receptors of potential concern for this pathway.<br>The sampling unit for soil is 0 to 0.5 feet below ground surface (bgs), 0.5 to 5 ft. bgs, and 5 ft. bgs to the top of the saturated zone, depending on the nature of the soil area being investigated. |
| ***OFF-PROPERTY SURFACE WATER*** | |
| 2a. Identify the Principal Study Questions | 1. Do COPCs in surface water in Vince Bayou and Little Vince Bayou pose an unacceptable risk to human health or ecological receptors?<br>2. Do COPCs in surface water in background areas pose an unacceptable risk to human health or ecological receptors?<br>3. What is the general chemistry of surface water (near AOI-1 and in background areas)?<br>4. What is the watershed sub-basin and what are the associated uses of the off-property surface water?<br>5. What is the nature of the habitat in areas where off-property surface water is present?<br>6. What are the surface water flow characteristics in Vince Bayou and Little Vince Bayou? |
| 2b. Define Alternative Actions | *The alternative actions that could result from the resolution of the principal study questions are to recommend that portions of AOI-1 i) require no further evaluation or selection of a remedy; or ii) warrant additional assessment or selection of a remedy.* |

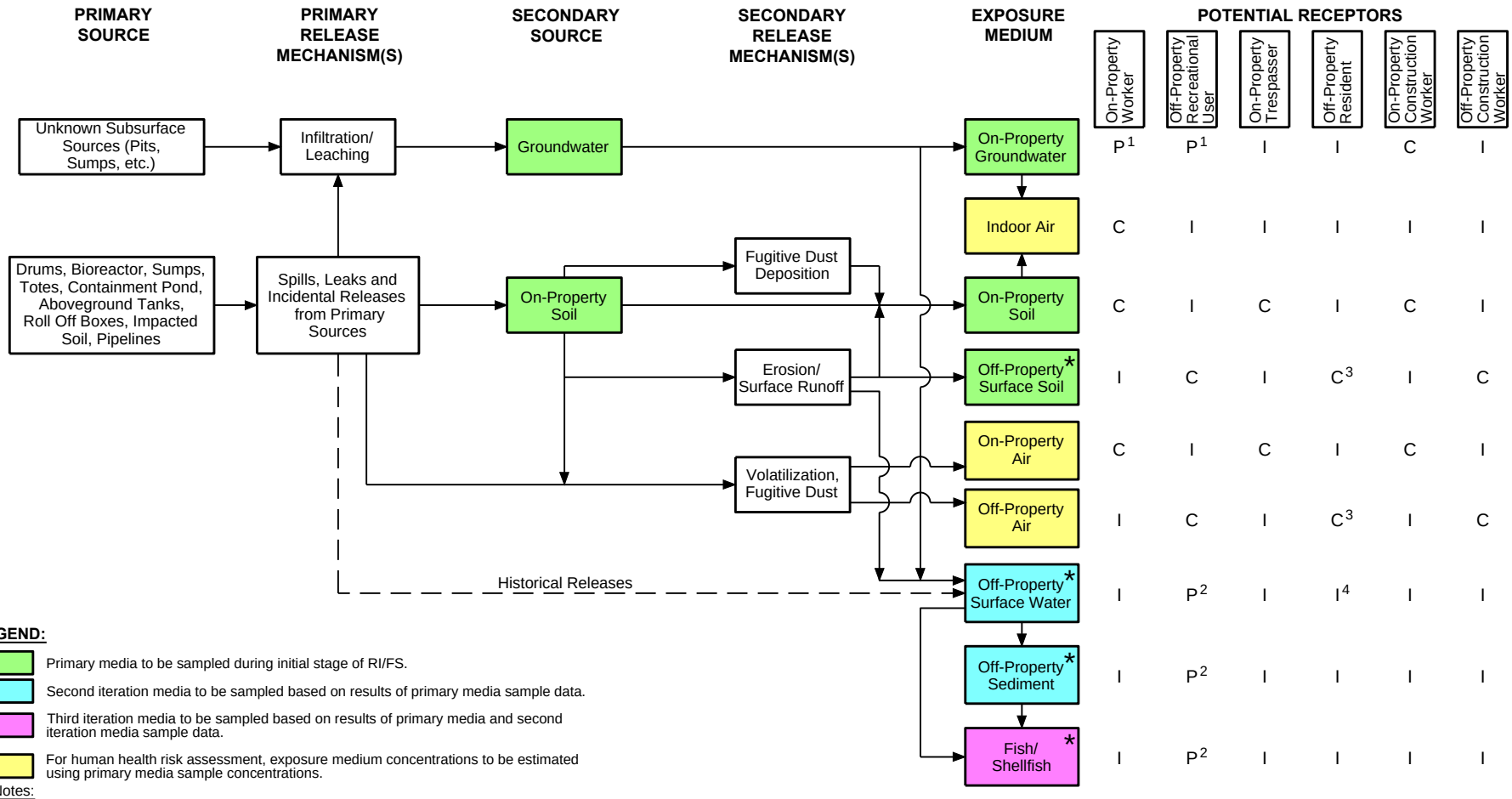
## TABLE 9 – DATA QUALITY OBJECTIVES FOR AOI-1

| | |
|---|---|
| 3. Identify Information Inputs | 1. Delineate the boundary and drainage within the watershed sub-basin.<br>2. Identify potential land use practices that might have impacted surface water adjacent to AOI-1.<br>3. Identify on-going and/or historic spills/releases that have or have the potential to impact surface water.<br>4. Collect data to characterize surface water flow regime (e.g., flow velocity, groundwater to surface water interactions, etc.).<br>5. Evaluate the surface water quality and the potential presence of COPCs in surface water. |
| 4. Identify the Boundaries of the Study | • The spatial boundaries of the project are the surface water in Vince Bayou and Little Vince Bayou near the USOR Property.<br>• The PCSMs show the receptors of potential concern for this pathway.<br>• The sampling unit for surface water is a depth approximately halfway between the surface and the bottom of the water body in Vince Bayou and Little Vince Bayou and background areas. |
| ***OFF-PROPERTY SEDIMENT*** | |
| 2a. Identify the Principal Study Questions | 1. Do COPCs in off-property sediment pose an unacceptable risk to human health or ecological receptors?<br>2. Do COPCs in off-property sediment in background areas pose an unacceptable risk to human health or ecological receptors?<br>3. What is the nature of habitat in areas where sediment is present?<br>4. What is the general chemistry and physical characteristics of off-property sediment (near the USOR Property and in background areas)? |
| 2b. Define Alternative Actions | *The alternative actions that could result from the resolution of the principal study questions are to recommend that portions of AOI-1 i) require no further evaluation or selection of a remedy; or ii) warrant additional assessment or selection of a remedy.* |
| 3. Identify Information Inputs | 1. Identify ongoing and/or historic spills/releases that have or have the potential to impact sediment in Vince Bayou or Little Vince Bayou.<br>2. Collect sediment samples from Vince Bayou and background areas upstream in Vince Bayou and Little Vince Bayou. |
| 4. Identify the Boundaries of the Study | • The spatial boundaries of the project are the sediments in Vince Bayou and Little Vince Bayou near the USOR Property.<br>• The PCSMs show the receptors of potential concern for this pathway.<br>• The sampling unit for these sediments is the biologically active zone in Vince Bayou and Little Vince Bayou and background sediment. |

## TABLE 9 – DATA QUALITY OBJECTIVES FOR AOI-1

| ***FISH AND SHELLFISH*** | |
|---|---|
| 2a. Identify the Principal Study Questions | 1. Do COPCs in Vince Bayou and Little Vince Bayou fish tissue pose an unacceptable risk to human health or ecological receptors? |
| 2b. Define Alternative Actions | *The alternative actions that could result from the resolution of the principal study questions are to recommend that portions of AOI-1 i) require no further evaluation or selection of a remedy; or ii) warrant additional assessment or selection of a remedy.* |
| 3. Identify Information Inputs | • Collect samples from finfish species (legal size limit) commonly caught in the area and consumed; and samples from shellfish caught in the vicinity of AOI-1.<br>• Measure USOR-Property-related COPCs in fish tissue samples collected (COPCs, excluding essential nutrients, detected above sample quantitation limits (SQLs) and background in the sediment samples will determine the list of COPCs to be analyzed in fish tissue samples).<br>• Validate the analytical data.<br>• If warranted, analyze background fish tissue samples for selected COPCs reported in fish tissue samples.<br>• QA/QC samples: Collect 1 field duplicate and 1 MS/MSD sample per species for COPC analyses.<br>• Analytical method detection limit targets will be identified following sediment sampling. |
| 4. Define Boundaries of the Study | • The boundaries are the approximate USOR Property boundaries as extended to the adjacent Vince Bayou. Background samples will be collected from a designated area upstream of this area as well as in Little Vince Bayou.<br>• No vertical boundaries – fish may be sampled from any depth.<br>• The PCSMs show the receptors of potential concern for this pathway.<br>• The sampling unit for fish and shellfish are individual fillet samples although composite shellfish samples may be necessary to provide adequate sample volume. |

**FIGURES**




**LEGEND:**

- Primary media to be sampled during initial stage of RI/FS.
- Second iteration media to be sampled based on results of primary media sample data.
- Third iteration media to be sampled based on results of primary media and second iteration media sample data.
- For human health risk assessment, exposure medium concentrations to be estimated using primary media sample concentrations.

Notes:

C Pathway is potentially complete.

P Pathway is possibly complete.

I Pathway is incomplete.

1 It is unlikely that shallow groundwater in this area is useable given the salinity. However, data will be collected to characterize the salinity of all relevant groundwater bearing units. A survey of the on- and off-property area for the presence of water wells will also be performed as part of the groundwater investigation. Potential impacts will be investigated to ensure that these pathways are incomplete for off-property groundwater and/or deeper groundwater units, if appropriate.

2 Potential exposures and associated chemicals of concern for these receptors will be evaluated through an iterative process in consideration of primary source data and data for transport media collected during the RI/FS.

3 Potential impacts from soil VOC and particulate dust emissions potentially impacting nearby residents will be evaluated based on the primary media data to evaluate the completeness of migration pathways to off-property air, fruit trees, above-ground and below-ground produce, and domestic livestock.

4 Surface water is not a potable or agricultural resource due to high natural salinity and bacterial levels in the area.

* Sampling of these media to be performed in conjunction with appropriate background sampling.

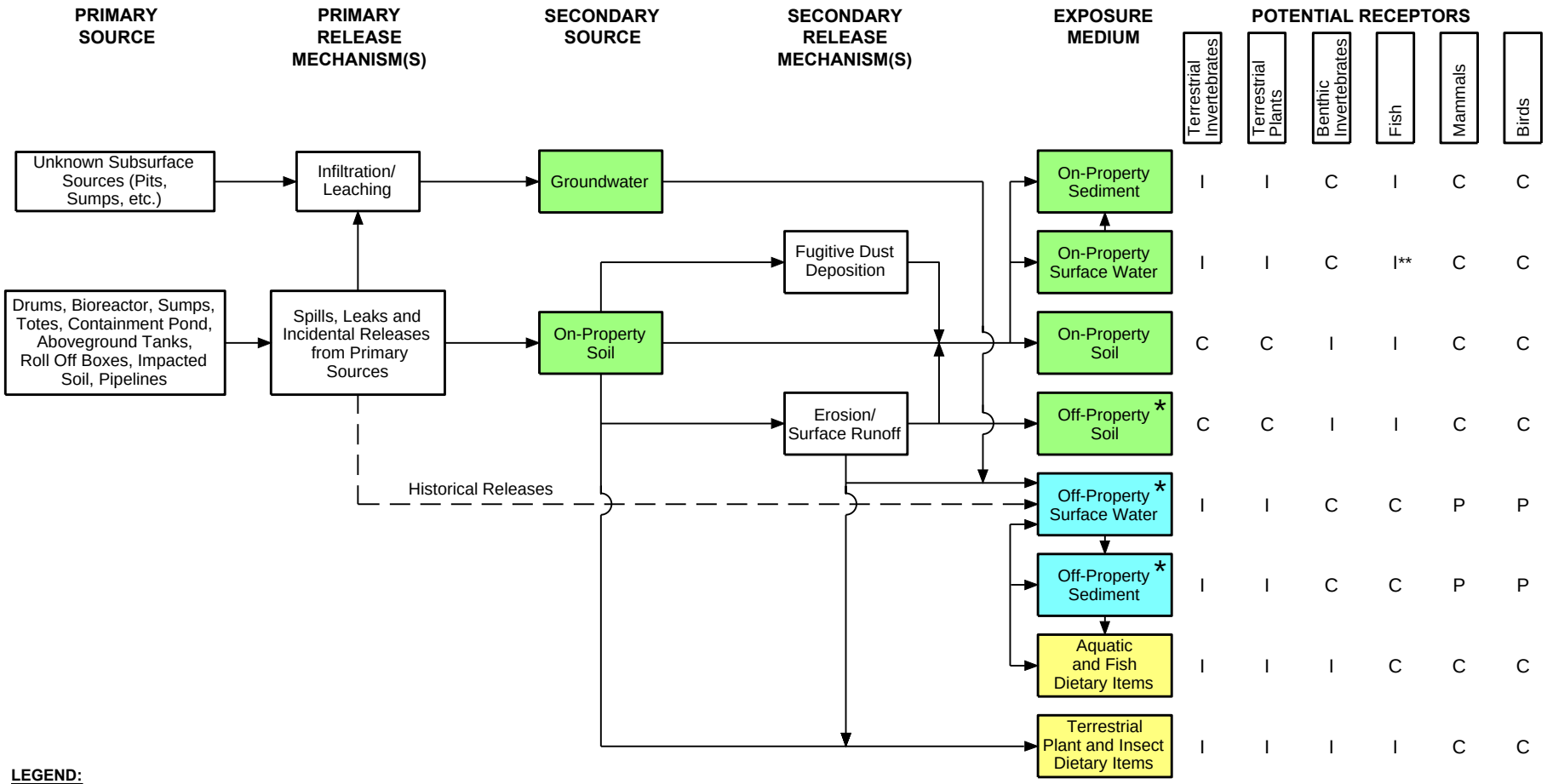
**US OIL RECOVERY SITE**
PASADENA, TEXAS

Figure 1

# PRELIMINARY HUMAN HEALTH CONCEPTUAL SITE MODEL USOR PROPERTY

| | | |
|---|---|---|
| PROJECT: 1863 | BY: ZGK | REVISIONS |
| DATE: APRIL., 2014 | CHECKED: KHT | |

**PASTOR, BEHLING & WHEELER, LLC**
CONSULTING ENGINEERS AND SCIENTISTS




**LEGEND:**

Primary media to be sampled during initial stage of RI/FS.

Second iteration media to be sampled based on results of primary media sample data.

For screening level ecological risk assessment, exposure medium concentrations to be estimated using primary media sample concentrations.

Notes:

C Pathway is potentially complete.

I Pathway is incomplete.

P Potential exposures for COPCs will be evaluated in an iterative manner based on sample results from primary media.

* Sampling of these media to be performed in conjunction with appropriate background sampling.

** Fish were not observed. If fish are observed during investigation activities, this pathway will be evaluated.

**US OIL RECOVERY SITE**
PASADENA, TEXAS

Figure 2

**PRELIMINARY ECOLOGICAL CONCEPTUAL SITE MODEL USOR PROPERTY**

| | | |
|---|---|---|
| PROJECT: 1863 | BY: ZGK | REVISIONS |
| DATE: APRIL., 2014 | CHECKED: KHT | |

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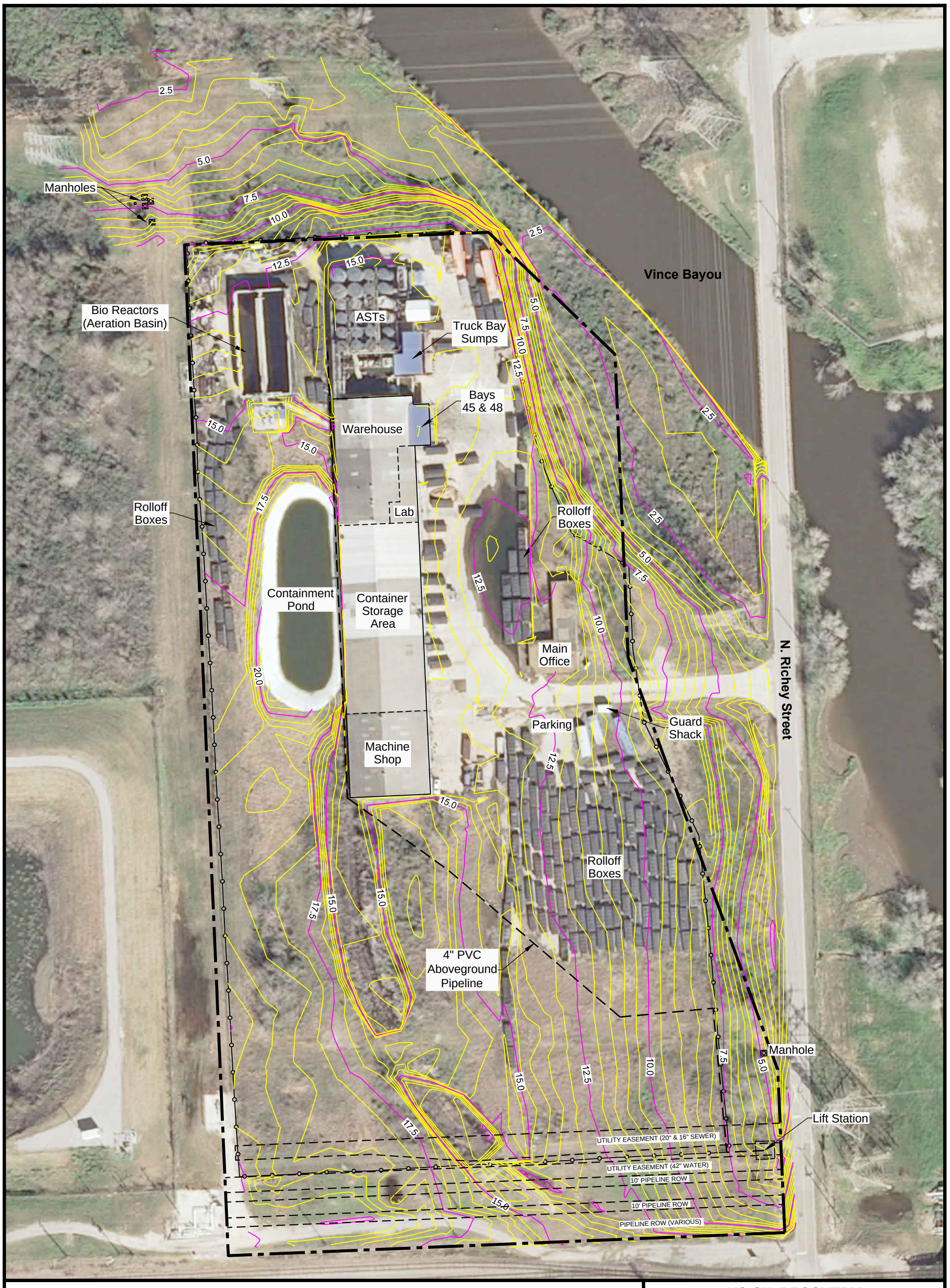


## EXPLANATION

- Approx. Property Boundary
- Approx. Security Fence

N

Approx. Scale in Feet

0 50 100

Source:
Houston-Galveston Area Council, April 2012 Image, 2012 Aerial Imagery Data is the sole property of Houston-Galveston Area Council, which reserves all rights thereto. Use or reproduction of this data is strictly prohibited absent written consent from the Houston-Galveston Area Council.

**US OIL RECOVERY**
PASADENA, TEXAS

Figure 3

# USOR PROPERTY
# AREA OF INVESTIGATION 1
# SITE LAYOUT

| | | |
|---|---|---|
| PROJECT: 1863 | BY: AJD | REVISIONS |
| DATE: APRIL, 2014 | CHECKED: MKW | |

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## EXPLANATION

- Approx. Property Boundary
- Approx. Security Fence
- Approx. Soil Sample Location
- Approx. Surface Water Sample Location
- Approx. Background Surface Water and Sediment Sample Location

Source:
Houston-Galveston Area Council, April 2012 Image, 2012 Aerial Imagery Data is the sole property of Houston-Galveston Area Council, which reserves all rights thereto. Use or reproduction of this data is strictly prohibited absent written consent from the Houston-Galveston Area Council.

Notes:

1. See tables 2-8 for sample data.

N

Approx. Scale in Feet

0 75 150

**US OIL RECOVERY**
PASADENA, TEXAS

Figure 4

# AREA OF INVESTIGATION 1 HISTORICAL SAMPLE LOCATION MAP

| | | |
|---|---|---|
| PROJECT: 1863 | BY: AJD | REVISIONS |
| DATE: APRIL, 2014 | CHECKED: MKW | |

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## EXPLANATION

- Approx. Property Boundary
- Approx. Security Fence
- Approx. Surface Water and/or Sediment Sample Location (EPA, 2011)
- Approx. Background Surface Water and Sediment Sample Location

N

Approx. Scale in Feet

0 125 250

Source:
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**US OIL RECOVERY**
PASADENA, TEXAS

Figure 5

**HISTORICAL SURFACE WATER AND SEDIMENT SAMPLING LOCATIONS**

| | | |
|---|---|---|
| PROJECT: 1863 | BY: AJD | REVISIONS |
| DATE: APRIL, 2014 | CHECKED: MKW | |

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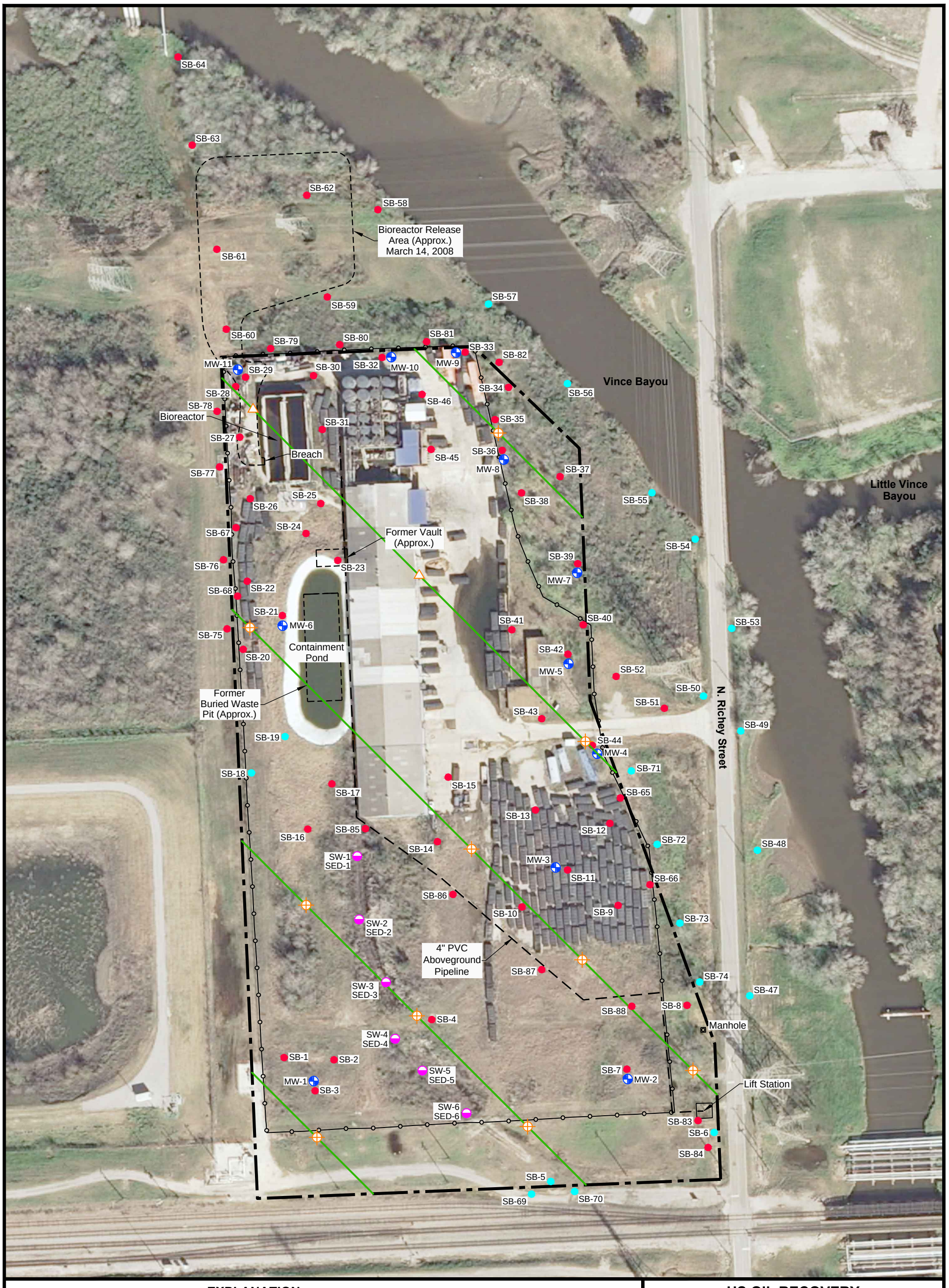


## EXPLANATION

- Approx. Property Boundary
- Approx. Security Fence
- Proposed Soil Boring Location (Source Areas/Industrial Activities)
- Proposed Soil Boring Location (Drainage Areas)
- Proposed Surface Water/ Sediment Sample Location
- Proposed Monitoring Well Location
- Proposed CPT/ROST Transect Location
- Proposed CPT Location
- Proposed CPT/ROST Location

Note:
All locations are approximate and subject to change.

N

Approx. Scale in Feet

0 60 120

Source:
Houston-Galveston Area Council, April 2012 Image, 2012 Aerial Imagery Data is the sole property of Houston-Galveston Area Council, which reserves all rights thereto. Use or reproduction of this data is strictly prohibited absent written consent from the Houston-Galveston Area Council.

**US OIL RECOVERY**
PASADENA, TEXAS

Figure 6

# AREA OF INVESTIGATION 1 PROPOSED SAMPLING LOCATIONS RI/FS ITERATION 1

| | | |
|---|---|---|
| PROJECT: 1863 | BY: AJD | REVISIONS |
| DATE: APRIL, 2014 | CHECKED: MKW | |

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CONSULTING ENGINEERS AND SCIENTISTS

**ATTACHMENT D-1**

**AREA OF INVESTIGATION 1**
**PROPERTY HISTORY AND SAMPLING RATIONALE**

**ATTACHMENT D-1 – AREA OF INVESTIGATION 1**
**PROPERTY HISTORY AND SAMPLING RATIONALE**

This document summarizes the ownership and operational history for Area of Investigation 1 (AOI-1) at the US Oil Recovery (USOR) Superfund Site, previous and proposed removal actions at AOI-1, and a rationale for the proposed sample locations described in the Scope of Work. This information will also be included in the Remedial Investigation/Feasibility Study (RI/FS) Work Plan and is provided in this document as additional support for the investigative approach described in the Scope of Work.

## GENERAL SITE INFORMATION

The USOR Property is located at 400 North Richey Street in Pasadena, Harris County, Texas, 77506 (Figure 3 of the Scope of Work). The approximately 12.2 acre property was most recently used as a used oil processing and waste treatment facility by US Oil Recovery LP (USOR LP). The facility is within a larger industrial complex in the north part of the City of Pasadena, TX. Mixed industrial/residential areas are south of the facility while Vince Bayou and the Houston Ship Channel are to the north.

An office building, security guard shack, and large warehouse (approximately 25,000 square feet in size) are present on the property. The warehouse includes a former laboratory, machine shop, parts warehouse, and a material processing area that included a filter press. Approximately 800 55-gallon drums (some in over-packs) and 212 poly totes (300-400 gallons) containing various industrial wastes are present within the warehouse. A tank farm with approximately 24 aboveground storage tanks (ASTs) containing industrial wastes located within secondary containment is located on the north end of the warehouse. A large, concrete-walled aeration basin (also called the bioreactor) is located west of the tank farm. A containment pond is located west of the warehouse and south of the aeration basin. Approximately 225 roll-off boxes fitted with precipitation covers are located on the property. An inactive rail spur enters the south-central part of the USOR Property from the south and extends north along the west side of the warehouse. A utility right-of-way with various pipelines is present within the southern part of the property and pipelines are also present outside of the property along the eastern and western sides.

The following historical operations have reportedly been conducted at the USOR Property:

- Manufacturing of arsenical, chlorate, and borate pesticide and herbicide products;
- Manufacturing of fertilizer and sulfuric acid;
- Leather tanning and cow hide exporting;
- Storage of various hard goods; and
- Used oil processing and waste treatment.

### Potential On-Site Releases

This section describes potential releases from USOR Property operations that may have impacted environmental media from 2005 until late 2010. These releases are described in the HRS Documentation (EPA, 2011) for the USOR Property. If the location of a release listed below is known, it is shown on Figure D-1-1.

**October 7, 2005.** The TCEQ Region 12 Waste Program received a complaint that alleged USOR LP had discharged contaminated stormwater from a pipe located just outside the entrance to the property and dumped tank bottom waste into a manhole located on the southeast side of the USOR Property (Figure D-1-1). The manhole was connected to the sewer line used by USOR LP to discharge treated wastewater to the City of Pasadena. During the inspection a ditch was observed with dark colored water between N. Richey Street and the manhole. The TCEQ investigator concluded that the water appeared to overflow from the manhole since the vegetation near the manhole was distressed. Soil samples were collected and

results showed concentrations of arsenic, lead and mercury exceeding TCEQ Commercial/Industrial Protective Concentration Limits (PCLs) for soil protective of Class 1/2 groundwater near the manhole on the southeast side of the site and at the stormwater outfall near the front gate. The analyte list included all RCRA metals, copper, nickel, zinc, BTEX compounds, and TPH. $^{Total}Soil_{Comb}$ PCLs were not exceeded for any of the compounds evaluated.. There is no indication that this release migrated past the ditch near the facility.

**February 23, 2006.** A TCEQ Region 12 Waste Program investigator collected soil samples near the northwest corner of the tank farm where an oil spill had occurred; at the north end of the former arsenic burial pit located to the west of the warehouse building; and in a drainage area west of the warehouse building. These samples contained concentrations of arsenic, barium, lead, mercury, several pesticides, SVOCs, and VOCs exceeding commercial/industrial PCLs. Information related to the concentrations of the compounds analyzed and which PCLs were exceeded was not included in the reference to the HRS. USOR LP reported that the oil spill near the northwest corner of the tank farm was a result of 50 to 100 gallons of liquid released onto the ground from a leaking pipeline near the containment wall. According to USOR LP, impacted soil was removed although there is no information related to the analytical testing, area of potential impact, or the removal action. The exact locations of the releases were not provided in the HRS.

**December 17, 2007.** TCEQ found an unauthorized discharge of wastewater onto the ground due to cracks in the west wall of the aeration basin. Six soil samples were collected: two samples from approximately three feet from the base of the basin, one sample from approximately 58 feet away at the north fence line; two samples from the adjacent downgradient property to the north; and one sample from approximately 88 feet north of the USOR Property. Arsenic, lead and mercury were measured above TRRP Tier 1 residential PCLs. Information related to the concentrations of the compounds analyzed and which PCLs were exceeded was not included in the reference to the HRS. There is no indication that this release migrated beyond the sampling point 88 feet north of the USOR Property. The exact location of the release cannot be determined because a map was not provided in the HRS for this release.

**March 14, 2009.** USOR LP reported that there was a release of several hundreds of gallons of hazardous waste from the west side of the bioreactors, which migrated north on the property about 150 feet and then outside of the property another 200 feet to the north (Figure D-1-1). Affected soil was excavated and disposed of off-site. No information was provided to indicate what compounds were analyzed for or how it was determined if soil was affected. There is no indication that this release migrated beyond 200 feet to the north of the USOR Property.

**September 2009 through January 2010.** During several site inspections, roll-off boxes, containers, and drums in the warehouse were observed to be leaking and no secondary containment was present. According to the RCRA §7003 Unilateral Administrative Order, "On December 2, 2009, EPA inspectors observed the stormwater basin overflow with the discharge going to Vince Bayou. An oily sheen was present in the off-site discharge." Several waste material samples were collected but no samples of environmental media were collected. The exact locations of the releases were not noted and a map was not provided in the HRS.

**July 2, 2010.** After a large rainfall, the TCEQ visited the site and discovered that it had been abandoned. The TCEQ reported the potential release of hazardous substances because numerous roll-off boxes labeled as containing hazardous waste were filled with liquid, overflowing onto the ground, and the liquid was flowing off-site. Because of the rainfall, Vince Bayou was flooded and breached N. Richey Street. Because of the visual observation of uncontrolled release of liquids from the retention pond, secondary containments, and roll-off boxes labeled as containing hazardous waste, EPA initiated an Emergency

Response and Removal Action to stabilize the site and prevent further migration of site related constituents off-site. The exact locations of the releases were not noted and a map was not provided in the HRS.

**November 4, 2010.** The Harris County Public Health and Environmental Services (HCPHES) reported that an oily discharge was occurring from the USOR Property following a heavy rain. EPA found damaged containers in the warehouse and the overflow and off-site migration of liquids to Vince Bayou. The exact location of the release was not noted and a map was not provided in the HRS. No environmental samples were collected during this inspection.

**Investigation History**

According to the PA (TCEQ, 2011) and other documents, the following environmental investigations have been conducted at the USOR Property. Note that although these investigations are described in various documents and references to concentrations of various constituents are also included, sample location maps and/or actual analytical data are typically not provided in the documents. Furthermore, for many of those investigations where data are provided, the data are of limited value due to the fact that much of the data lack the required backup information such as sample location maps, quality assurance/quality control (QA/QC) data, and/or analytical method information. Data with the appropriate backup information are described in the Existing Data Evaluation section of the Scope of Work, including data summary tables and sample location maps.

**1971.** Over 100 soil samples were collected in the Spring of 1971 at varying depths. Sample locations were not provided. Arsenic was the only compound evaluated. Samples ranged in concentration less than 10 mg/kg to greater than 3,000 mg/kg in two samples.

**1973.** According to Progress Report No. 2 Dated October 3, 1973 and associated laboratory reports for several sampling events, water samples were collected in various tanks, a sump pit, and other locations; and soil samples were collected mostly from the west side of the warehouse building (but also in other locations as noted in the laboratory reports). It appears that this work was done in order to focus the areas where excavation would be conducted.

**October 30, 1991.** A Phase 2A Environmental Site Assessment (ESA) was prepared for Covesud S.A. by Espey, Huston & Associates (EH&A) which described the investigation of a below-grade concrete vault that was located west of the warehouse (Figure D-1-1). Soil and groundwater samples were collected from three borings. Arsenic and several pesticides were measured in soil and groundwater from all three borings while groundwater and soil samples collected at one boring also contained various organic constituents that appeared to be solvent and resin-related compounds.

**November 14, 1991.** EH&A completed a Phase 2B ESA for Covesud S.A. to further investigate the area near the concrete vault. A below-grade pit (tank) was also discovered within the warehouse. Samples were analyzed for arsenic and copper, VOCs, SVOCs, TPH, and pesticides. Soil and groundwater samples collected from these additional borings associated with the vault contained elevated levels of arsenic, copper and pesticides. The contents of the tank were sampled and indicated the presence of arsenic and copper but not the other analytes.

**October 7, 1992.** TWC issued a NOV for unauthorized discharge after becoming aware of soil and groundwater contamination at the USOR Property. Specifically, the NOV states, “Analytical results from soil and groundwater samples collected from the above-referenced site indicate a high concentration of arsenic, and high level of total petroleum hydrocarbons, and the presence of several pesticide and organic solvent constituents.”

**December 4, 1995.** Seven surface soil samples were collected by Environmental Remedies, Inc. and analyzed for TCLP metals and three water samples were collected from three concrete pits containing water and wastewater from prior industrial use as part of this investigation. All samples were analyzed for TCLP metals, VOCs, and SVOCs. Sample locations were not provided although the report indicates they are contained in an appendix to the report. The soil samples indicated the presence of barium and lead at levels below TCLP hazardous criteria. Composite samples from concrete wastewater pit 1 indicated the presence of mercury and several VOCs and SVOCs. Barium, cadmium, chromium and lead were identified in the water sample from pit 2. No results or summary information were provided for pit 3 other than a statement that this was "an outside pit that measures 8' x 10' and is nothing more than a water gathering pit adjacent to a water valve/fire hydrant."

**March 2, 1998.** Twenty discrete surface soil samples were collected at the west side of the storage warehouse. The soil sample locations occurred beginning approximately 50 feet north of the former vault area and heading south on 50 foot centers. Arsenic concentrations ranged from the detection limit to 190 mg/kg. According to the report from Extra Environmental, Inc. dated March 2, 1998, the data indicated three areas of potential impact with 1) the highest concentrations analyzed occurred north of the former vault area; 2) the second area located south of the former vault area and adjacent to the former warehouse; and 3) the third area located south of the former vault area and west of the former warehouse.

**June 24 through July 17, 2001.** Soil and groundwater samples were collected throughout the USOR Property by EFEH & Associates as part of an Environmental Site Assessment for Arsenic in Groundwater and Soil on behalf of Mr. Decker McKim of ReMax Southeast. The report, dated August 27, 2001, indicates that the rail spur that ran along the rear of the warehouse has been removed. The current occupants were using the property to store appliances and church storage. Samples were analyzed for arsenic only. Of the 25 soil samples, only one had measured concentrations greater than 200 mg/kg and none of the groundwater samples collected from the boreholes exceeded 0.05 mg/L. The one soil sample with arsenic measured at 219 mg/kg was taken from the center of the pit on the west side of the warehouse (Figure D-1-1). On January 14, 2002, the Corrective Action Section requested additional information and submittal of an Affected Property Assessment Report (APAR).

**May 16, 2002.** An APAR was prepared and sent to the TCEQ by Mr. Decker McKim on behalf of Hide Exporters of Texas. It appears that this report re-packaged the data that was collected during the summer of 2001 (and submitted at that time as an Environmental Site Assessment by EFEH & Associates). TCEQ issued a notice of deficiency on August 29, 2002 requesting a revised report to fulfill the Agency reporting requirements and further information related to the use of the critical PCL for arsenic of 200 mg/kg. On March 20, 2003, the TCEQ requested additional information after reviewing a response letter dated December 26, 2002 related to the critical PCL used in the evaluation since 18 soil samples exceeded the soil to groundwater PCL of 2.5 mg/kg. In addition, this letter asked that the synthetic precipitate leaching procedure (SPLP) test be performed on soil samples.

**April 2003.** Twenty-nine additional soil and 10 additional groundwater samples were collected and analyzed for arsenic as documented in a submittal to the TCEQ on May 6, 2003. The dimensions of the arsenic waste pit were delineated by the additional boreholes. The submittal provided information related to the impervious nature of the highly compact silty clay underlying the property and results of the SPLP test. On August 18, 2003, the TCEQ gave conditional approval of the APAR: the soil assessment phase was deemed to be complete but additional information related to groundwater was requested.

**September 15, 2003.** Additional information was submitted by the property owner related to analytical data from samples collected on September 3, 2003 from the groundwater monitoring wells; and recorded

deed notices, TRRP Deed Notice and Industrial Solid Waste Deed Notice of Waste Disposal for the arsenic pit, which was left in place at that time.

**October 7, 2005.** TCEQ Region 12 Waste Program investigator collected three samples of surface soil from an area of distressed vegetation located near a manhole on the southeast side of the USOR Property and analyzed the samples for BTEX, TPH and inorganic compounds. Results showed concentrations of arsenic, lead and mercury exceeding TCEQ Commercial/Industrial PCLs for soil protective of Class 1/2 groundwater near the manhole on the southeast side of the property and at the stormwater outfall near the front gate. It should be noted that $^{Tot}Soil_{Comb}$ PCLs were not exceeded for any of the compounds evaluated, and that the analyte list included all RCRA metals, copper, nickel, zinc, BTEX compounds, and TPH. There is no indication that this release migrated past the ditch near the facility.

**February 23, 2006.** A TCEQ Region 12 Waste Program investigator collected soil samples near the northwest corner of the tank farm where an oil spill had occurred; at the north end of the former arsenic burial pit located to the west of the warehouse building; and in a drainage area west of the warehouse building. These samples contained concentrations of arsenic, barium, lead, mercury, several pesticides, SVOCs, and VOCs exceeding commercial/industrial PCLs. TCEQ recommended the following corrective action: the horizontal and vertical extent of contamination must be determined, provisions under TRRP must be applied, and an APAR and Remedial Action Plan (RAP) should be submitted. Information related to the concentrations of the compounds analyzed and which PCLs were exceeded was not included in the reference to the HRS. USOR LP reported that the oil spill near the northwest corner of the tank farm was a result of 50 to 100 gallons of liquid released onto the ground from a leaking pipeline near the containment wall. According to USOR LP, impacted soil was removed although there is no information related to the analytical testing, area of potential impact, or the removal action. The exact locations of the releases were not provided in the HRS.

**December 17, 2007.** TCEQ Region 12 Waste Program investigator collected six soil samples after observing a leak in the aeration basin. Two soil samples were collected approximately three feet from the basin; one soil sample was collected approximately 58 feet away at the north fence line; one sample was taken approximately 88 feet north of USOR Property; and two soil samples were collected on the adjacent down-gradient property to the north. The two samples collected on the adjacent down-gradient property to the north contained petroleum hydrocarbons at levels that required remediation. All six soil samples contained arsenic, lead, and/or mercury exceeding TCEQ TRRP Tier 1 residential PCLs. Information related to the concentrations of the compounds analyzed and which PCLs were exceeded was not included in the reference to the HRS. There is no indication that this release migrated beyond the sampling point 88 feet north of the USOR Property. The exact location of the release cannot be determined because a map was not provided in the HRS for this release.

**October 12, 2009.** Letter sent by USOR LP reporting completion of remediation activities following a March 14, 2009 release of waste from the aeration basin. Results of confirmation samples collected and analyzed for metals, VOCs, and SVOCs were submitted to TCEQ. Arsenic concentrations off-site were elevated but USOR LP indicated that the bioreactors did not contain arsenic-bearing material since they do not receive arsenic-bearing waste at the facility.

**ATTACHMENT D-1 – AREA OF INVESTIGATION 1**
**PROPERTY HISTORY AND SAMPLING RATIONALE**

**Removal/Response Actions**

This section describes removal or remedial actions that have occurred at the facility based on available documents. In addition, proposed remedial actions by the PRP group are provided. Additional actions may be necessary pending the results of the RI.

**Property Owner Actions**

**December 7, 1973.** In a progress report from Rhodia Inc., Chipman Division dated December 7, 1973 related to actions required following a court hearing, a removal action consisting of the removal of 5,000 cubic yards of arsenic-contaminated soil from an area on the west side of the warehouse building (what is now the tank farm) was completed. The contaminated soil was disposed of on-property and treated with lime to immobilize the arsenic. Based on a September 1973 drawing, the borrow pits are located on the southwest portion of the property.

**1990.** Contaminated soil was removed and placed in an on-site pit on the west side of the warehouse and mixed with lime to form calcium arsenate and thus render it insoluble in water. This is later called the arsenic waste pit.

**September 22, 2003.** USOR LP removed 1,608 cubic yards of arsenic waste and soil from a buried waste pit on the west side of the warehouse. This material was disposed of off-site. On October 10, 2003, the TCEQ approved the waste removal report. On October 17, 2003, the TCEQ indicated to Hide Exporters of Texas that TRRP Remedy Standard A had been achieved for this area and no post-response action care was needed. This letter addresses two reports that are not in the PA (TCEQ, 2011 or HRS documentation) – Groundwater Sampling and Institutional Control Report dated September 15, 2003 and Groundwater Sampling Report dated September 26, 2003.

**July 21, 2005.** Sixty cubic yards of soil was excavated near a manhole and ditch associated with surface water discharge from USOR Property. This excavation was reported by USOR LP to be in response to a request from the City of Pasadena Fire Marshal after a paint spill occurred on N. Richey Street. USOR LP employees indicated that the October 2005 incident involving the manhole and an alleged release was a result of Vince Bayou flooding and then becoming stagnant in the excavated areas that were now lower-lying than the rest of the general area.

**Letter from USOR LP dated March 2, 2006.** USOR LP reported that, on or during a TCEQ inspection on January 10, 2006, 50 to 100 gallons of liquid was released onto the ground from a leaking pipeline near the containment wall by Tank 3. Impacted soil was removed although there is no information related to the analytical testing, area of potential impact, or the removal action.

**Letter from USOR LP dated October 12, 2009.** Following a release of hazardous waste from the west side of the bioreactors, which migrated north on the property about 150 feet and then outside of the USOR Property another 200 feet to the north, USOR LP initiated response actions that included removing liquids by vacuum truck and removal of about 3 inches of soil by dozer, backhoe and hand excavation from the affected areas. 115 cubic yards of soil was disposed of off-site in the Fort Bend Landfill. Confirmation samples were collected and analyzed for metals, VOCs, and SVOCs to confirm that site remediation objectives (Tier 1 Commercial/Industrial Soil PCLs) had been met within one week following a March 14, 2009 release of waste from the aeration basin. Arsenic concentrations off-site were elevated but USOR LP indicated that the bioreactors did not contain arsenic-bearing material since they do not receive arsenic-bearing waste at the facility.

**ATTACHMENT D-1 – AREA OF INVESTIGATION 1**
**PROPERTY HISTORY AND SAMPLING RATIONALE**

**EPA Lead**

**August 2, 2010.** EPA completed its Emergency Response and Removal at the site, which included securing and inventorying 225 roll-off boxes, 797 drums, and 212 poly totes and disposing of approximately 392,000 gallons of non-hazardous material off-site.

**November 4, 2010.** Following a heavy rain and observing damaged containers in the warehouse leaking and migrating off-site, EPA recovered approximately 410,000 gallons of non-hazardous oily liquid waste from the north and south secondary containment (tank farm) areas, sumps and bays, and parking lot. In addition, nine vacuum boxes of non-hazardous sludge waste and four vacuum boxes of hazardous sludge removed from various tanks were disposed of off-site. EPA personnel completed the emergency response on December 20, 2010.

**PRP Removal Actions**

The PRP Group is in the process of implementing a series of removal actions to address some of the potential source areas on the USOR Property. These removal actions are being performed pursuant to the Removal Action AOC dated August 25, 2011. Specific removal action scopes were described in addenda to the Site Stabilization and Monitoring Work Plan submitted in accordance with the Removal Action AOC requirements. Work Plan Addendum No. 1, dated April 20, 2012, described the approach and procedures for removal and off-site disposal of liquids and solids from the bioreactor followed by bioreactor demolition. The bioreactor liquids were removed in accordance with this addendum in the summer of 2012. Subsequent sampling of the bioreactor solids indicated that due to the characteristics of those materials a different removal approach would be needed. Work Plan Addendum No. 2, dated July 29, 2013, provided the approach and procedures for removal and off-site disposal of the bioreactor solids and other containerized materials, including liquids and solids in the 225 roll-off boxes associated with the former USOR LP operations. Removal of the roll-off box liquids has been performed. Removal of bioreactor and roll-off box solids is currently underway. The discharge of approximately 600,000 gallons of water from the containment pond to Vince Bayou was performed in December 2013 in accordance with an authorization from the EPA and TCEQ. Additional discharges from the pond may be performed, as warranted. Future removal actions are intended to address the contents of the aboveground storage tanks (and associated sumps and containment areas and totes/drums within the warehouse.

**SAMPLING RATIONALE**

**SOIL SAMPLE LOCATIONS**

On-property and off-property soil sample locations (Figure 6 of the Scope of Work) and information relied upon to determine sampling locations is presented below. This information is based on review of historic Site documents, historic aerial photographs (attached), and reconnaissance observations at the USOR Property.

Soil samples will be collected to evaluate the lateral and vertical extent of constituents of potential concern (COPCs) in soils. Soil sample collection intervals would be based on location specific information (i.e., deeper samples collected from “source” or “process related” areas and shallower samples collected from surface water run-off areas) and are anticipated to include one or more of the following intervals; surface soil (0 to 0.5 ft bgs), shallow soils (0.5 to 5 ft bgs), and subsurface soil (greater than 5 ft bgs) as described in the Scope of Work.

Preliminary soil sample locations are subject to revision based on the data and information collected during RI/FS Work Plan preparation and/or during the field investigation.

**ATTACHMENT D-1 – AREA OF INVESTIGATION 1**
**PROPERTY HISTORY AND SAMPLING RATIONALE**

**On-Property Soil Boring Location Rationale**

| Sample Location | Sample Location Rationale |
|---|---|
| SB-1 | Railroad spur loading/unloading pad observed in the 1944 aerial photograph (attached). |
| SB-2,3 | Lack of vegetation in this area on aerial photographs such as 1978, as well as text in historic reports regarding burial of arsenic contaminated soils in this general location. |
| SB-4 | Disturbed soil based on 2004 and 2008 aerial photographs. |
| SB-7 | Disturbed soils on the southeastern portion of the property based on 2004 aerial photograph. |
| SB-9,10,11, 65, 66 | Southeastern tank/roll-off box storage area used for the temporary containment of waste material. |
| SB-12 | Disturbed soils along the eastern property boundary based on 1944 aerial photograph and location of tank/roll-off box storage area used for the temporary containment of waste material. |
| SB-13 | Disturbed soils on the south-central portion of Site based on 2004, 2005, and 2007 aerial photographs; and location of tank/roll-off box storage area used for the temporary containment of waste material. |
| SB-14 | Stockpiled equipment on the southeast corner of the warehouse based on 2005 aerial photograph. |
| SB-15 | Equipment staging area east of the machine shop based on 2005 aerial photographs. |
| SB-16 | Soil sample collected in 2001 with elevated arsenic concentration. |
| SB-17 | Stockpiled material west of the machine shop and south of the containment basin based on 1978, and 2006 aerial photographs. |
| SB-18 | Drainage ditch enters the property from the western property based on the 1944 aerial photograph. |
| SB-19 | Drainage ditch extending from the western property dead ends at the railroad tracks, west of the warehouse, based on the 1953 aerial photograph. |
| SB-20, 67, 68 | Northwestern property boundary adjacent to the containment pond and in the vicinity of the tanks/roll-off boxes used for the temporary containment of waste material. |
| SB-21 | Immediately west of the containment pond. |
| SB-22 | Possible stockpiled material located to the west of the warehouse based on the 1978 aerial photograph, possible stockpiled material located to the west of the containment pond in the 2006 aerial photograph, and location of tanks/roll-off boxes used for the temporary containment of waste material. |
| SB-23 | Underground vault and run-off area west of the warehouse in numerous aerial photographs. |
| SB-24 | Five cylindrical and four square tanks/pits west of the warehouse based on the 1953 aerial photograph, soil disturbance west of the warehouse based on the 1989 aerial photograph, drainage path extending north from containment pond observed in the 2005 aerial photograph, and stockpiled material north of the containment pond as observed in the 2006 aerial photograph. |
| SB-25 | Soil sample collected on 1998 with elevated arsenic concentration. |
| SB-26 | Drainage path extends north from the pit/pad in 1995 aerial photograph, bare soil along the northwestern property boundary based on 2002 aerial photograph, stockpiled material in the 2004 aerial photograph, and location of tanks/roll-off boxes used for the temporary containment of waste material. |
| SB-27 | West of the bioreactors where tanks/roll-off boxes used for the temporary containment of waste material. |
| SB-28 | Bare soil areas along the northwestern Site property boundary based on 2002 aerial |

| | |
|---|---|
| | photograph. |
| SB-29 | Surface water drainage path away from bioreactors, based on Site reconnaissance observations. |
| SB-30 | Bare soil area in the 2005 and 2007 aerial photographs, north of the containment pond, and tanks/roll-off boxes used for the temporary containment of waste material. |
| SB-31 | Stockpiled material west of the AST area in the 1978 and 2004 aerial photographs, northwestern Site property boundary and around the aeration basin, and tanks/roll-off boxes used for the temporary containment of waste material. |
| SB-32 | Bare soils north of the ASTs based on the 2007 aerial photograph. |
| SB-33 | Bare soil on the north property boundary on 1953 aerial photograph, stockpiled material on the northeast corner of the Site based on 2004 aerial photograph, and tanks/roll-off boxes used for the temporary containment of waste material. |
| SB-40 | Bare soil that appears to receive runoff from the gravel parking area north of the entrance road, based on the 2007 aerial photograph. |
| SB-41 | Surface water accumulation area that drains to the east, just northwest of the office building, based on visual observations and aerial photographs (e.g., 2011). |
| SB-42 | Disturbed soils along the east boundary in the 1944 aerial photograph, and surface water drainage path observed during Site reconnaissance. |
| SB-43 | Disturbed soil south of office building as observed in the 1944 aerial photograph. |
| SB-44 | Surface water drainage area along southern entrance road based on reconnaissance observations (see 2011 aerial photograph) |
| SB-45 | Adjacent and southeast of AST loading/unloading area (see 2007 aerial photograph). |
| SB-46 | Adjacent and northeast of AST loading/unloading area (see 2007 aerial photograph) |
| SB-85 | Adjacent to aboveground pipeline |
| SB-86 | Adjacent to aboveground pipeline |
| SB-87 | Adjacent to aboveground pipeline |
| SB-88 | Adjacent to aboveground pipeline |

**ATTACHMENT D-1 – AREA OF INVESTIGATION 1**
**PROPERTY HISTORY AND SAMPLING RATIONALE**

**Off-Property Soil Boring Location Rationale**

| | |
|---|---|
| SB-5 | Storm water appears to enter the property at this location from the south, based on aerial photographs and property visit visual observations. |
| SB-6 | Storm water drainage ditch west of N. Richey Street at southeast property boundary. |
| SB-8 | Soil sample next to manhole where TCEQ observed discharge on 10/7/2005 and collected soil samples that were measured with elevated arsenic concentrations. |
| SB-34 | Disturbed soil at the northeast corner of the property based on the 1989 aerial photograph. |
| SB-35 | Drainage from earthen/gravel parking area east of the warehouse based on the 2002 aerial photograph. |
| SB-36 | Drainage from parking area east of the AST area based on 2008 aerial photograph, and tanks/roll-off boxes used for the temporary containment of waste material. |
| SB-37 | Bare soil adjacent and east-northeast of sludge bed based on 1953 aerial photograph and historical USOR Property drawings. |
| SB-38 | Sludge bed on the northeast corner of the property based on the 1953 aerial photograph. |
| SB-39 | Bare soil that appears to receive runoff from the gravel parking area north of the entrance road, based on the 2007 aerial photograph. |
| SB-47 | Storm water drainage ditch east of N. Richey Street. |
| SB-48 | Surface water discharge point into Vince Bayou. |
| SB-49 | Storm water drainage ditch east of N. Richey Street, east of the entrance drive. |
| SB-50 | Storm water drainage ditch west of N. Richey Street and north of the entrance drive. |
| SB-51 | Bare soil north of the entrance road, between N. Richey Street and the entrance gate, based on the 2004 aerial photograph. |
| SB-52 | Gravel parking area north of the entrance road to the property, prior to entering the property, based on the 2005 aerial photograph. |
| SB-53 | Storm water drainage ditch east of N. Richey Street. |
| SB-54 | Storm water drainage ditch west of N. Richey Street, where surface water discharges into Vince Bayou. |
| SB-55 | Storm water drainage northeast of the property, where surface water discharges into Vince Bayou. |
| SB-56 | Surface water discharge into Vince Bayou. |
| SB-57 | Surface water discharge into Vince Bayou. |
| SB-58 | Bare soil disturbance north of the property based on 1953 aerial photograph. |
| SB-59 | Storm water run-off from material stockpiled on northern portion of property based on 1978 aerial photograph. |
| SB-60 | Soil sample collected on 12/17/2007 where TCEQ observed run-off from a release at the bioreactor. |
| SB-61 | Stockpiled material north of the property boundary in the 1978 aerial photograph and bare soil area north of property based on 2004 aerial photograph. |
| SB-62 | Bare earthen area north of Site based on 2004 aerial photograph. |
| SB-63 | Bare earthen area north of Site based on 2004 aerial photograph. |
| SB-64 | Bare earthen area north of Site based on 2004 aerial photograph. |
| SB-69 | Storm water appears to enter the property at this location from the south, based on aerial photographs and property visit visual observations. |
| SB-70 | Storm water appears to enter the property at this location from the south, based on aerial photographs and property visit visual observations. |
| SB-71 | Adjacent to location of tank/roll-off box storage area used for the temporary containment of waste material. |
| SB-72 | Adjacent to location of tank/roll-off box storage area used for the temporary containment |

| | |
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| | of waste material. |
| SB-73 | Adjacent to location of tank/roll-off box storage area used for the temporary containment of waste material. |
| SB-74 | Adjacent to location of tank/roll-off box storage area used for the temporary containment of waste material. |
| SB-75 | Adjacent to the containment pond and in the vicinity of the tanks/roll-off boxes used for the temporary containment of waste material. |
| SB-76 | Adjacent to the containment pond and in the vicinity of the tanks/roll-off boxes used for the temporary containment of waste material. |
| SB-77 | Adjacent to the containment pond and in the vicinity of the tanks/roll-off boxes used for the temporary containment of waste material. |
| SB-78 | Adjacent to the containment pond and in the vicinity of the tanks/roll-off boxes used for the temporary containment of waste material. |
| SB-79 | Adjacent to bioreactor and tank area |
| SB-80 | Adjacent to bioreactor and tank area |
| SB-81 | Adjacent to bioreactor and tank area |
| SB-82 | Adjacent to tanks/roll-off boxes used for the temporary containment of waste material and in area of drainage away from parking lot |
| SB-83 | Adjacent to lift station on Southeast corner of property |
| SB-84 | Adjacent to lift station on Southeast corner of property |

**MONITOR WELL SAMPLE LOCATIONS**

Presented below is a description of on-property and off-property monitor well locations (Figure 6 of the Scope of Work) based on review of historic documents, historic aerial photographs, and reconnaissance observations. Monitor wells will be completed within the corresponding soil boring.

Preliminary monitor wells sample locations are subject to revision based on the data and information collected during RI/FS Work Plan preparation and/or during the field investigation.

| **Sample Location** | **Sample Location Rationale** |
|---|---|
| MW-1 (SB-3) | Southwestern corner of the property where a lack of vegetation and notes in reports reference burial of arsenic impacted soils. Assumed to be hydraulically up-gradient of the main operational area. |
| MW-2 (SB-7) | Southeastern corner of the property where disturbed soils were observed. Assumed to be hydraulically up-gradient of the main operational area. |
| MW-3 (SB-11) | Southeastern portion of the property where tanks/roll-off boxes are used for the temporary containment of waste material. Assumed to be hydraulically up-gradient of the main operational area. |
| MW-4 (SB-44) | Surface water drainage area along southern property entrance road based on reconnaissance observations. Assumed hydraulically down-gradient of warehouse maintenance area. |
| MW-5 (SB-42) | Near the east-central property boundary, northeast of the office where a soil disturbance was noted and adjacent to a surface water drainage path extending from the concrete truck staging area. Assumed to be hydraulically down-gradient of the warehouse maintenance area. |
| MW-6 (SB-21) | West of the containment pond where historic excavation was performed. Assumed to be hydraulically up-gradient of operational area. |
| MW-7 (SB-39) | Bare soil that appears to receive runoff from the gravel parking area north of the entrance road, based on the 2007 aerial photograph. Assumed hydraulically down- |

| | |
|---|---|
| | gradient of warehouse container storage area and containment pond. |
| MW-8 (SB-36) | Drainage from parking area east of the AST area based on 2008 aerial photograph, and tanks/roll-off boxes used for the temporary containment of waste material. Assumed hydraulically down-gradient of AST areas. |
| MW-9 (SB-33) | Near the northern property boundary in areas of bare soil disturbances and where tanks/roll-off boxes are used for the temporary containment of waste material. Assumed to be hydraulically down-gradient of the main AST area. |
| MW-10 (SB-32) | Bare soils north of the ASTs based on the 2007 aerial photograph. Assumed to be hydraulically down-gradient of the main AST area. |
| MW-11 (SB-29) | Surface water drainage path away from bioreactor, based on reconnaissance observations. Assumed hydraulically down-gradient of the bioreactor. |

**SURFACE WATER AND SEDIMENT SAMPLE LOCATIONS**

Presented below is a description of on-property surface water and sediment sample locations (Figure 6 of the Scope of Work) based on review of historic documents, historic aerial photographs, and reconnaissance observations.

Preliminary surface water and sediment sample locations are subject to revision based on the data and information collected during RI/FS Work Plan preparation and/or during the field investigation.

| **Sample Location** | **Sample Location Rationale** |
|---|---|
| SW-1<br>SED-1, SED-2, SED-3 | Former railroad spur area in southwest central portion of Site. Observed to retain water based on reconnaissance. |
| SW-2, SED-4, SED-5,SED-6 | Former railroad spur area in south central portion of Site. Observed to retain water based on reconnaissance. |

As indicated in the Scope of Work, off-property sediment and surface water sample locations will be determined based on the information obtained during on-property soil, groundwater, surface water and sediment sampling and off-property soil and groundwater sampling.

**REFERENCES**

Texas Commission on Environmental Quality (TCEQ), 1997. Impacts of Point and Nonpoint Sources on Vince Bayou and Little Vince Bayou Segment 1007 of the Houston Ship Channel. Prepared by Greg Conley. Field Operations Division. AS-130/SR. May 1997 (document indicates 1977 but based on the Commissioners and TNRCC letterhead and date of data presented, it is believed that the document is from 1997).

Texas Commission on Environmental Quality (TCEQ), 2011. Preliminary Assessment Report. US Oil Recovery, LLC. Pasadena, Harris County, Texas. TXR000051540. April.

U.S. Environmental Protection Agency (EPA), 2011. Hazard Ranking System (HRS) Documentation Record. US Oil Recovery. Site Spill Identifier No.: A6X7. Cerclis Site ID No. TXN000607093. September.

Bioreactor Release Area (Approx.) March 14, 2008
Manholes
Bio Reactors (Aeration Basin)
Breach
ASTs
Truck Bay Sumps
Bays 45 & 48
Warehouse
Former Vault
Rolloff Boxes
Lab
Containment Pond
Container Storage Area
Former Buried Waste Pit
Rolloff Boxes
Main Office
Parking
Guard Shack
Machine Shop
Rolloff Boxes
4" PVC Aboveground Pipeline
Manhole Oct. 7, 2005 Release
Lift Station
UTILITY EASEMENT (20" & 16" SEWER)
UTILITY EASEMENT (42" WATER)
10' PIPELINE ROW
10' PIPELINE ROW
PIPELINE ROW (VARIOUS)
Vince Bayou
Little Vince Bayou
N. Richey Street

## EXPLANATION

Approx. Property Boundary

Approx. Security Fence

N

Approx. Scale in Feet

0 60 120

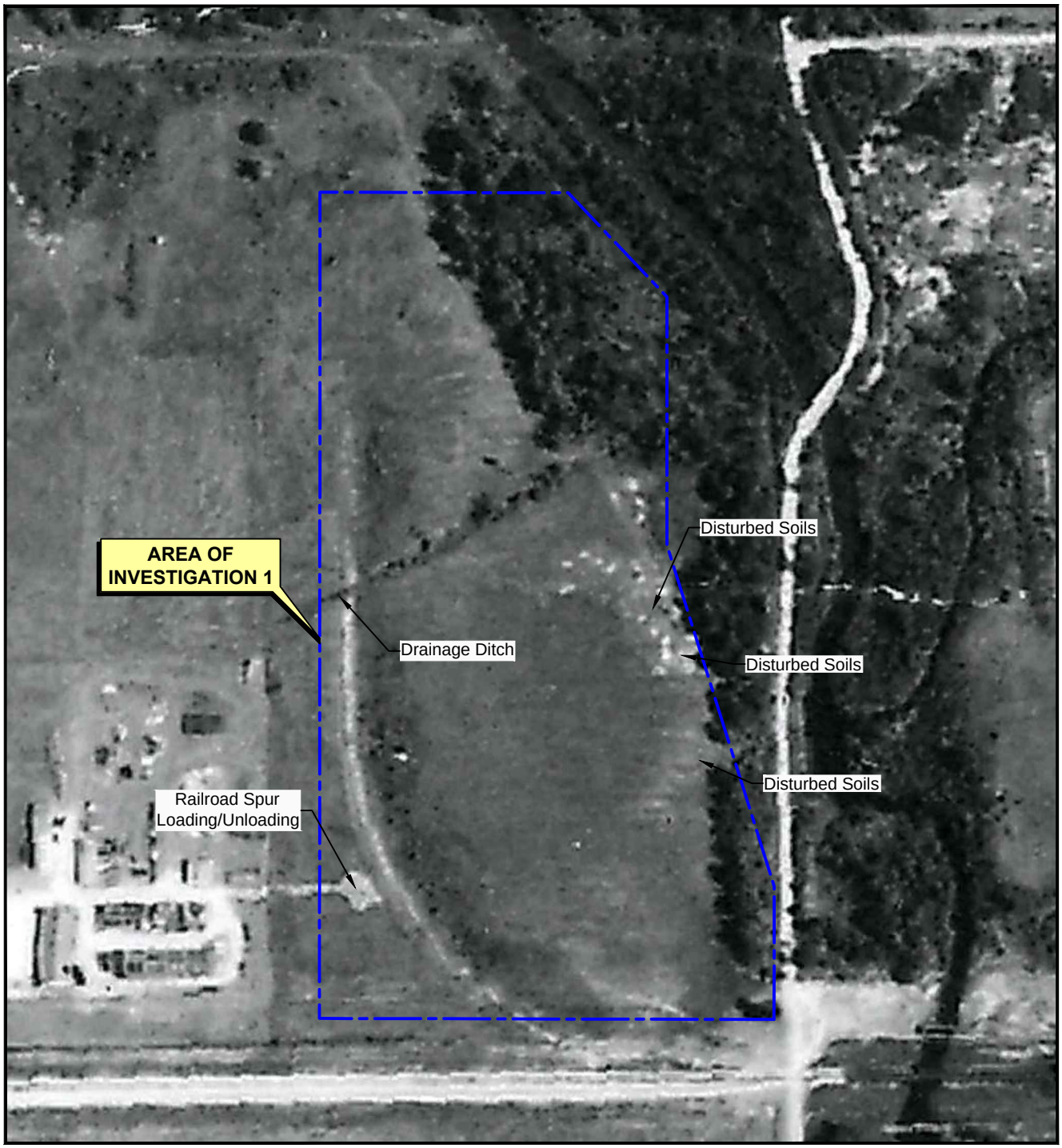
Source:
Houston-Galveston Area Council, April 2012 Image, 2012 Aerial Imagery Data is the sole property of Houston-Galveston Area Council, which reserves all rights thereto. Use or reproduction of this data is strictly prohibited absent written consent from the Houston-Galveston Area Council.

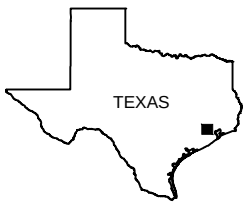
**US OIL RECOVERY**
PASADENA, TEXAS

Figure D-1-1
**USOR PROPERTY**
**AREA OF INVESTIGATION 1 (AOI-1)**
**LOCATIONS OF HISTORIC RELEASES AND INVESTIGATIONS**

| | | |
|---|---|---|
| PROJECT: 1863 | BY: AJD | REVISIONS |
| DATE: APRIL, 2014 | CHECKED: MKW | |

**PASTOR, BEHLING & WHEELER, LLC**
CONSULTING ENGINEERS AND SCIENTISTS




AERIAL PHOTO LOCATION

N

Approx. Scale In Feet

0 100 200

SOURCE:
Base map from Google Earth, dated December 1944.

**US OIL RECOVERY**
PASADENA, TEXAS

Figure D-1-2

# 1944 AERIAL PHOTOGRAPH

| | | |
|---|---|---|
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| DATE: APRIL, 2014 | CHECKED: MKW | |

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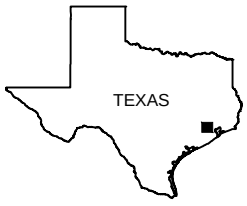


AERIAL PHOTO LOCATION

N

Approx. Scale In Feet

0 100 200

SOURCE:
Base map from Google Earth, dated December 1953.

**US OIL RECOVERY**
PASADENA, TEXAS

Figure D-1-3

# 1953 AERIAL PHOTOGRAPH

| | | |
|---|---|---|
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| DATE: APRIL, 2014 | CHECKED: MKW | |

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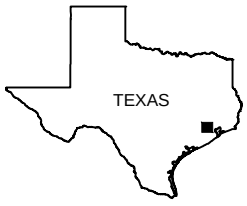
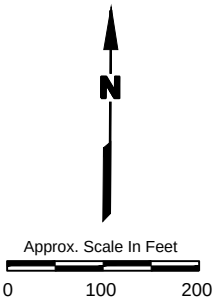



AERIAL PHOTO LOCATION




SOURCE:
Base map from EDR Report dated August 13, 2012, Pasadena, TX.

**US OIL RECOVERY**
PASADENA, TEXAS

Figure D-1-4

# 1953 AERIAL PHOTOGRAPH

| | | |
|---|---|---|
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| DATE: APRIL, 2014 | CHECKED: MKW | |

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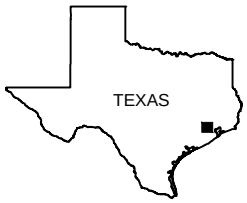


AERIAL PHOTO LOCATION

N

Approx. Scale In Feet

0 100 200

SOURCE:
Base map from EDR Report dated August 13, 2012, Pasadena, TX.

**US OIL RECOVERY**
PASADENA, TEXAS

Figure D-1-5

# 1962 AERIAL PHOTOGRAPH

| | | |
|---|---|---|
| PROJECT: 1863 | BY: AJD | REVISIONS |
| DATE: APRIL, 2014 | CHECKED: MKW | |

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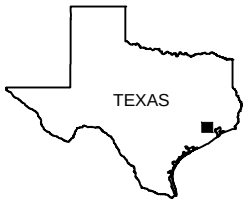


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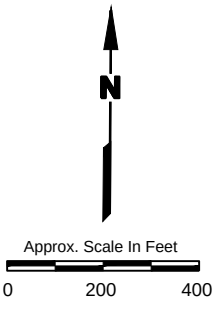


SOURCE:
Base map from Google Earth, dated December 1978.

**US OIL RECOVERY**
PASADENA, TEXAS

Figure D-1-6

# 1978 AERIAL PHOTOGRAPH

| | | |
|---|---|---|
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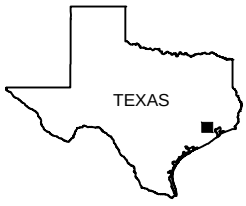


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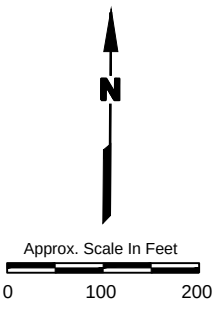


SOURCE:
Base map from EDR Report dated August 13, 2012, Pasadena, TX.

**US OIL RECOVERY**
PASADENA, TEXAS

Figure D-1-7

# 1979 AERIAL PHOTOGRAPH

| | | |
|---|---|---|
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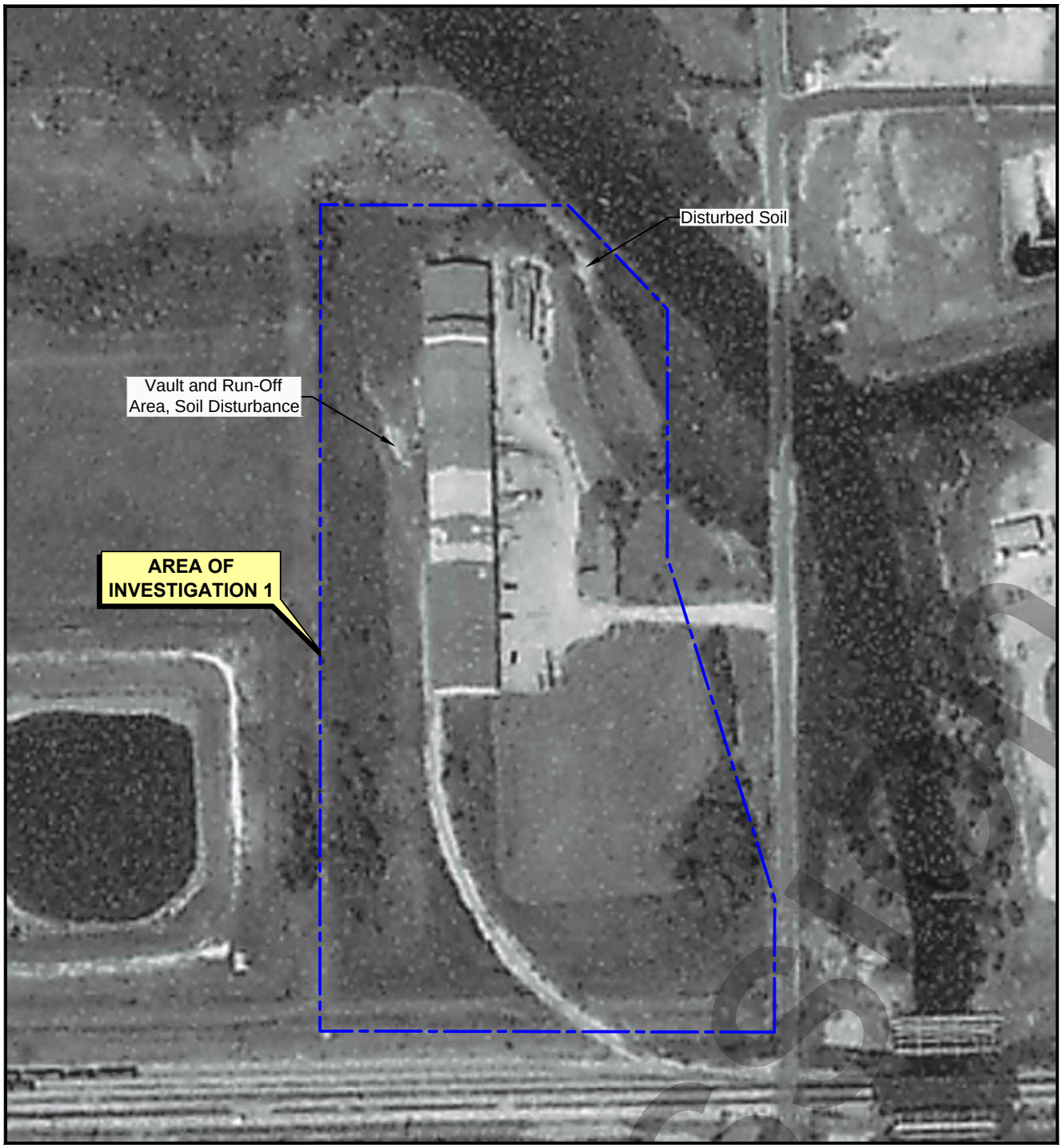


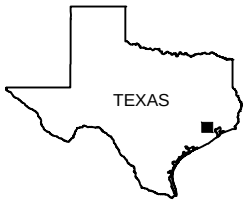


AERIAL PHOTO LOCATION

N

Approx. Scale In Feet

0 100 200

SOURCE:
Base map from EDR Report dated August 13, 2012, Pasadena, TX.

**US OIL RECOVERY**
PASADENA, TEXAS

Figure D-1-8

# 1989 AERIAL PHOTOGRAPH

| | | |
|---|---|---|
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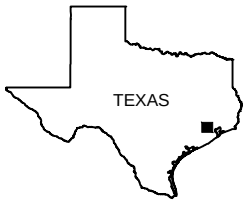


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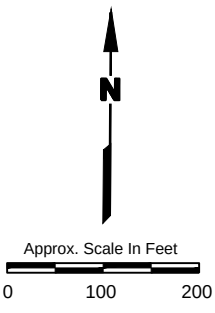


SOURCE:
Base map from Google Earth, dated January 1995.

**US OIL RECOVERY**
PASADENA, TEXAS

Figure D-1-9

# 1995 AERIAL PHOTOGRAPH

| | | |
|---|---|---|
| PROJECT: 1863 | BY: AJD | REVISIONS |
| DATE: APRIL, 2014 | CHECKED: MKW | |

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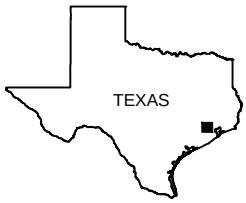
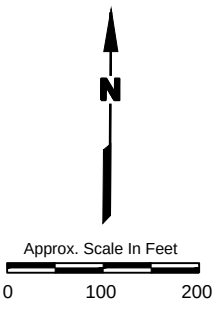



AERIAL PHOTO LOCATION




SOURCE:
Base map from EDR Report dated August 13, 2012, Pasadena, TX.

**US OIL RECOVERY**
PASADENA, TEXAS

Figure D-1-10

# 1995 AERIAL PHOTOGRAPH

| | | |
|---|---|---|
| PROJECT: 1863 | BY: AJD | REVISIONS |
| DATE: APRIL, 2014 | CHECKED: MKW | |

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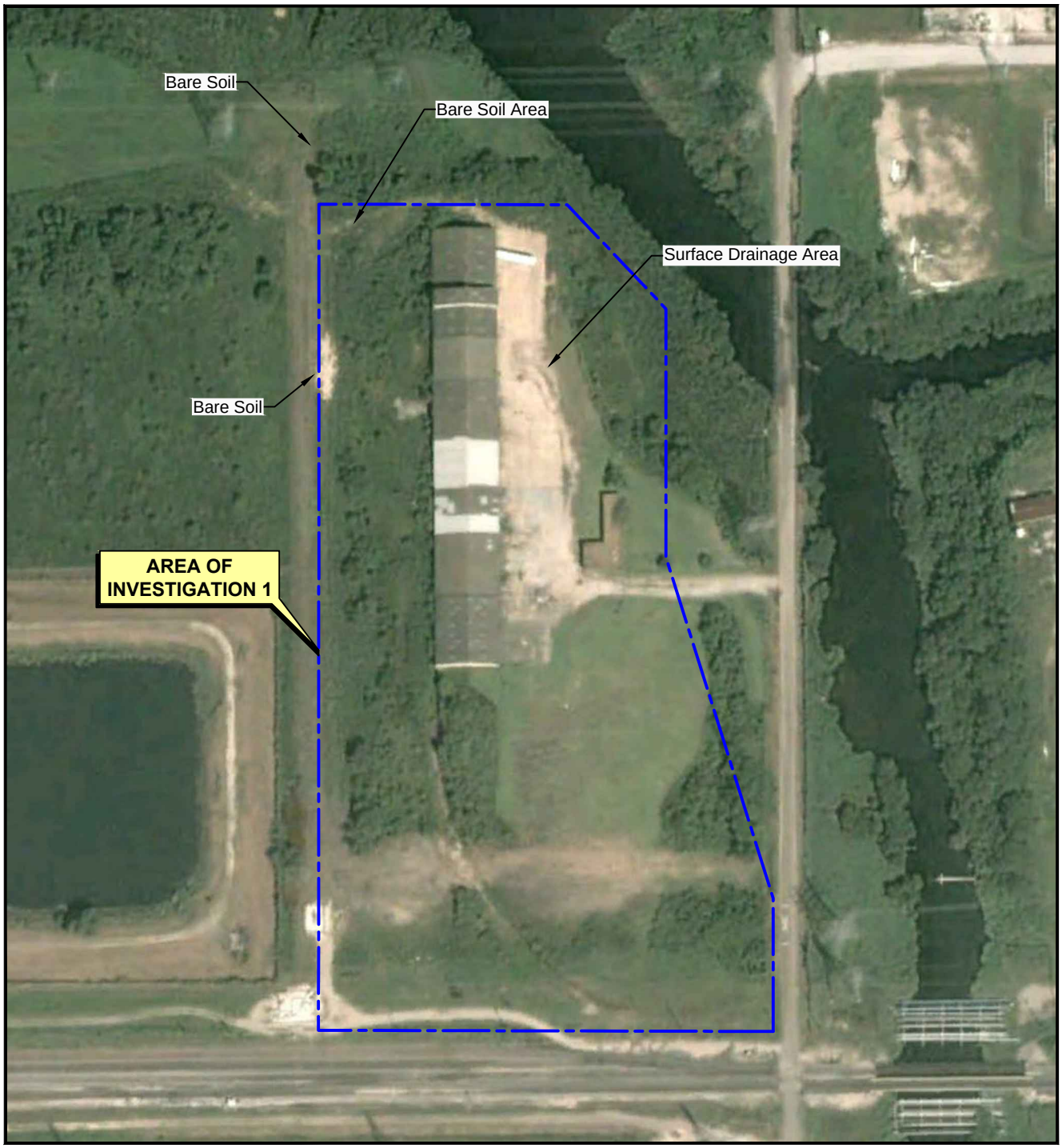


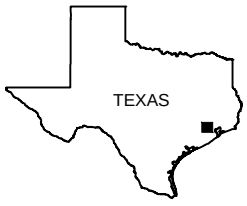


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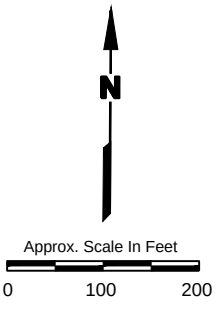



SOURCE:
Base map from Google Earth, dated October 2002.

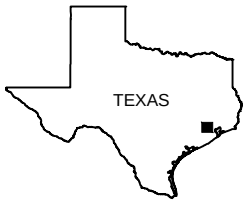
**US OIL RECOVERY**
PASADENA, TEXAS

Figure D-1-11

# 2002 AERIAL PHOTOGRAPH

| | | |
|---|---|---|
| PROJECT: 1863 | BY: AJD | REVISIONS |
| DATE: APRIL, 2014 | CHECKED: MKW | |

**PASTOR, BEHLING & WHEELER, LLC**
CONSULTING ENGINEERS AND SCIENTISTS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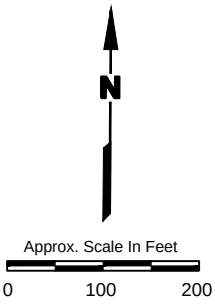



SOURCE:
Base map from Google Earth, dated February 2004.

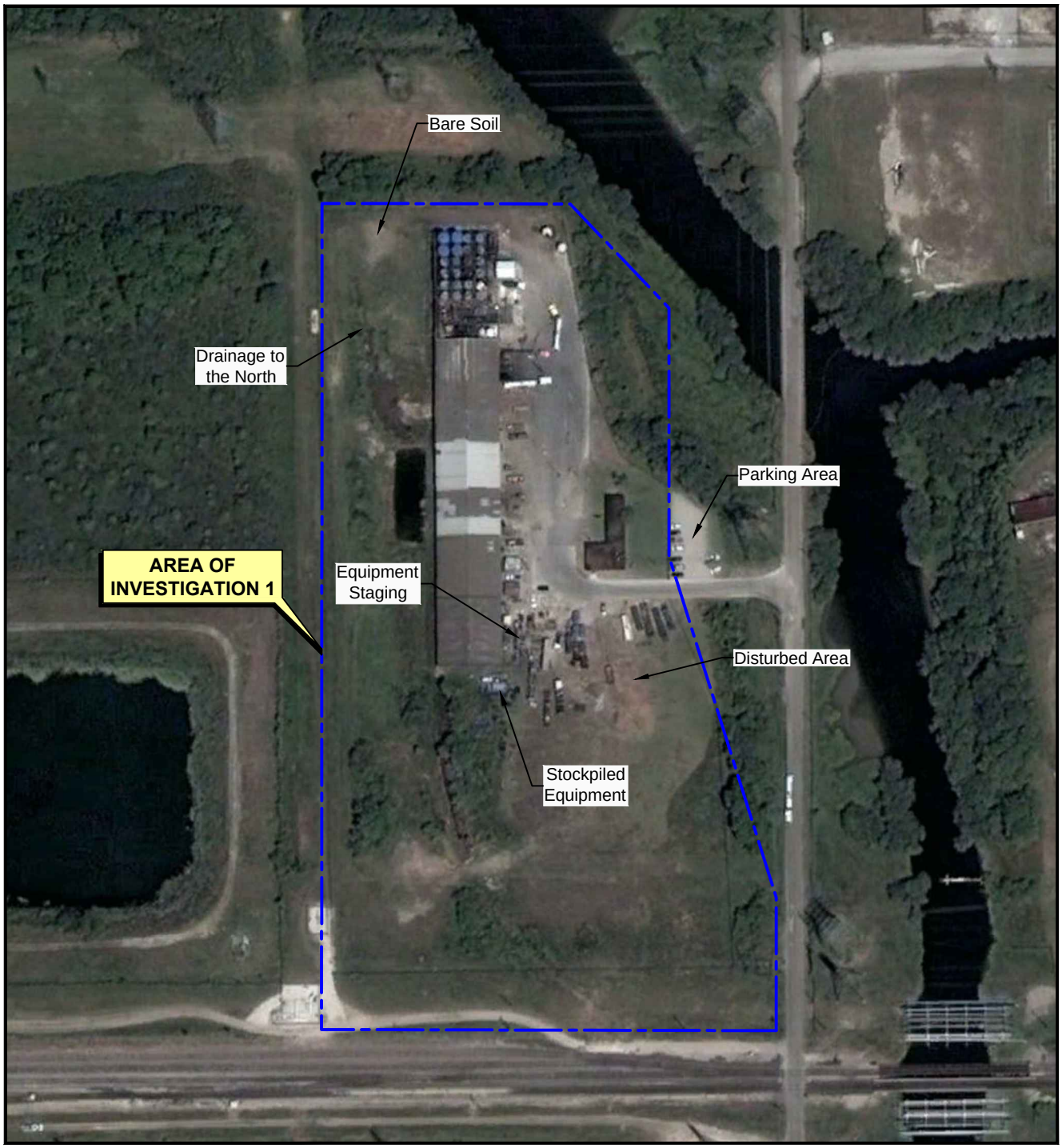
**US OIL RECOVERY**
PASADENA, TEXAS

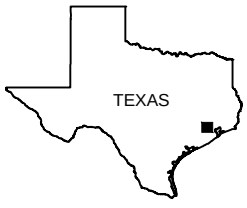
Figure D-1-12

## 2004 AERIAL PHOTOGRAPH

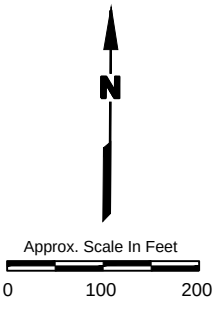
| PROJECT: 1863 | BY: AJD | REVISIONS |
|---|---|---|
| DATE: APRIL, 2014 | CHECKED: MKW | |

**PASTOR, BEHLING & WHEELER, LLC**
CONSULTING ENGINEERS AND SCIENTISTS




AERIAL PHOTO LOCATION




SOURCE:
Base map from Google Earth, dated April 2005.

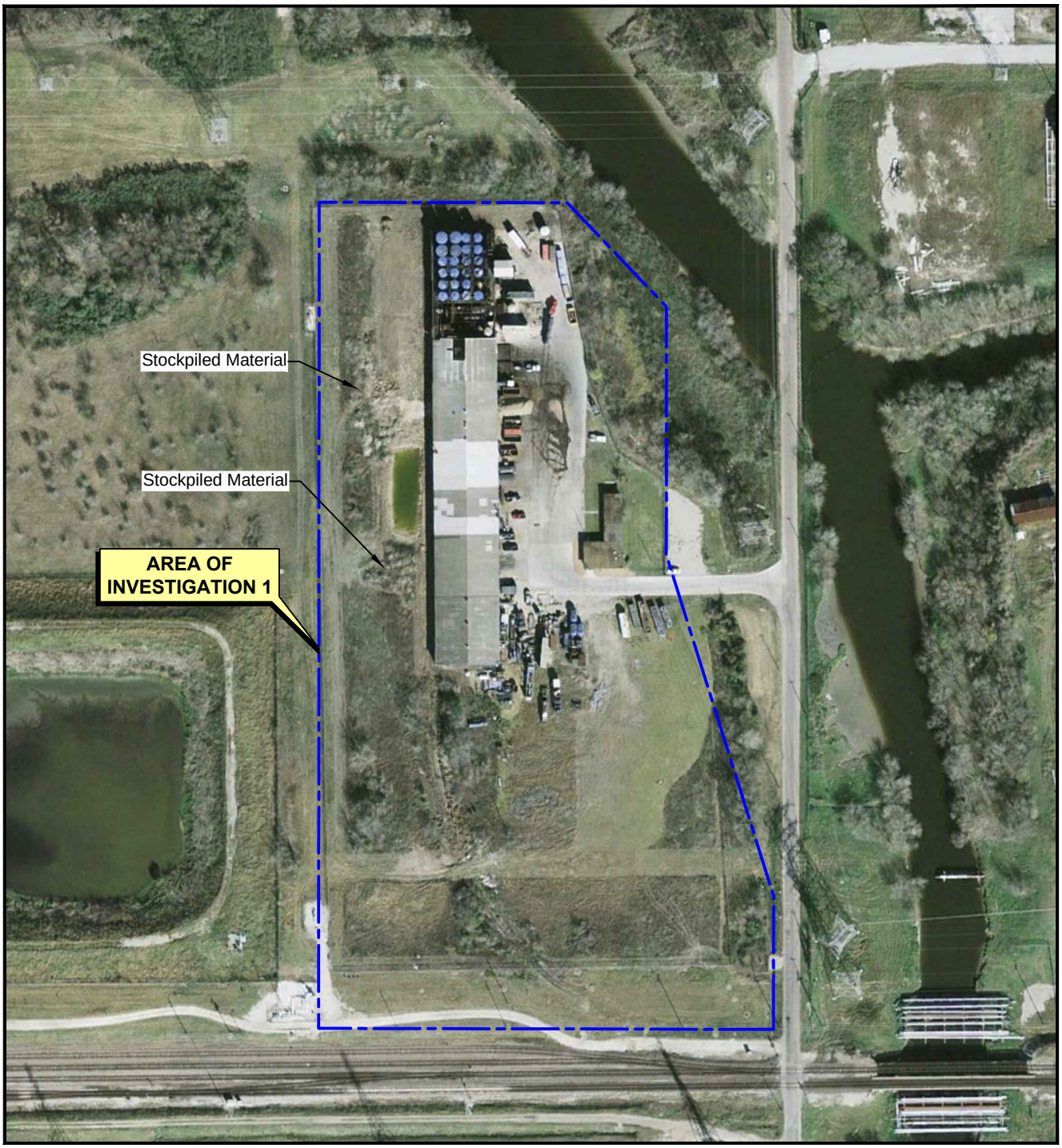
**US OIL RECOVERY**
PASADENA, TEXAS

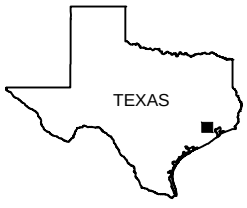
Figure D-1-13

# 2005 AERIAL PHOTOGRAPH

| | | |
|---|---|---|
| PROJECT: 1863 | BY: AJD | REVISIONS |
| DATE: APRIL, 2014 | CHECKED: MKW | |

**PASTOR, BEHLING & WHEELER, LLC**
CONSULTING ENGINEERS AND SCIENTISTS




AERIAL PHOTO LOCATION

N

Approx. Scale In Feet

0 100 200

SOURCE:
Base map from Google Earth, dated January 2006.

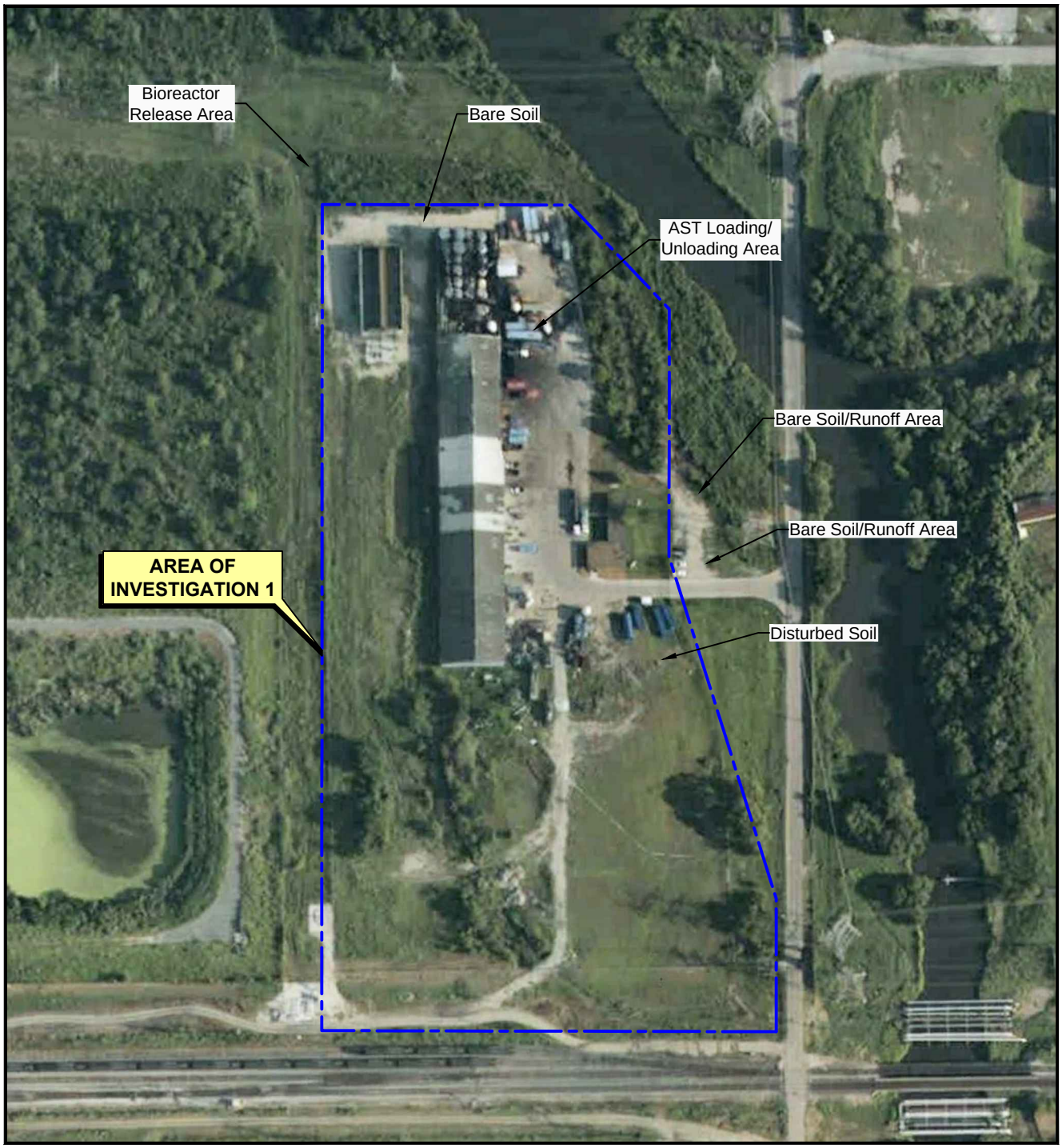
**US OIL RECOVERY**
PASADENA, TEXAS

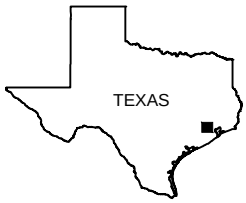
Figure D-1-14

# 2006 AERIAL PHOTOGRAPH

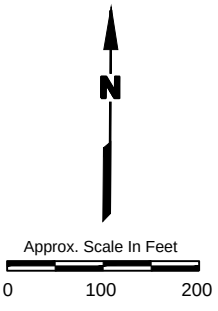
| | | |
|---|---|---|
| PROJECT: 1863 | BY: AJD | REVISIONS |
| DATE: APRIL, 2014 | CHECKED: MKW | |

**PASTOR, BEHLING & WHEELER, LLC**
CONSULTING ENGINEERS AND SCIENTISTS




AERIAL PHOTO LOCATION




SOURCE:
Base map from Google Earth, dated September 2007.

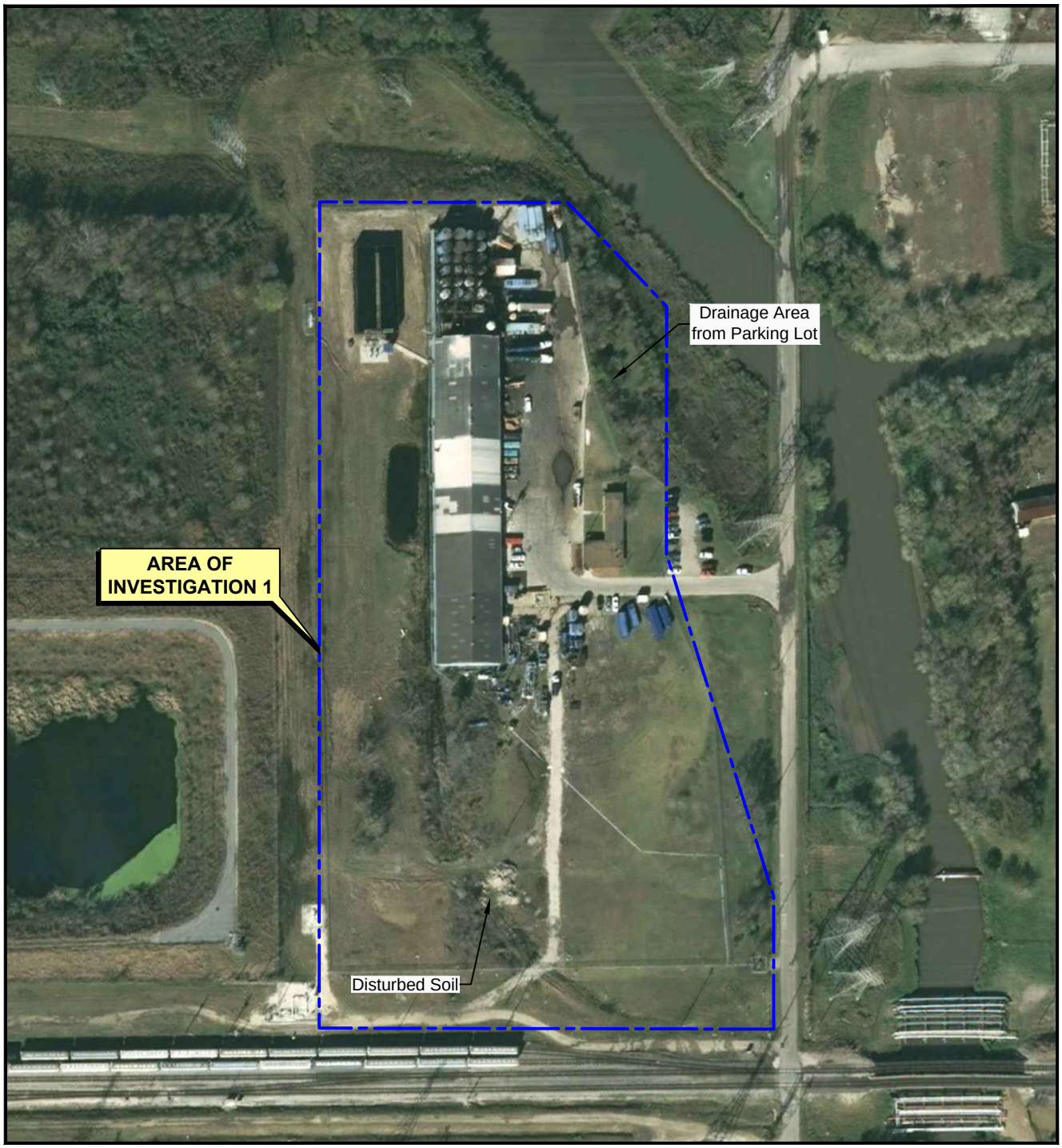
**US OIL RECOVERY**
PASADENA, TEXAS

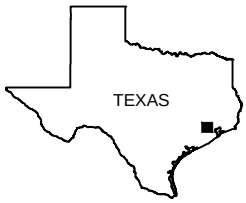
Figure D-1-15

# 2007 AERIAL PHOTOGRAPH

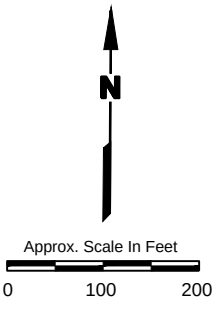
| | | |
|---|---|---|
| PROJECT: 1863 | BY: AJD | REVISIONS |
| DATE: APRIL, 2014 | CHECKED: MKW | |

**PASTOR, BEHLING & WHEELER, LLC**
CONSULTING ENGINEERS AND SCIENTISTS




AERIAL PHOTO LOCATION




SOURCE:
Base map from Google Earth, dated January 2008.

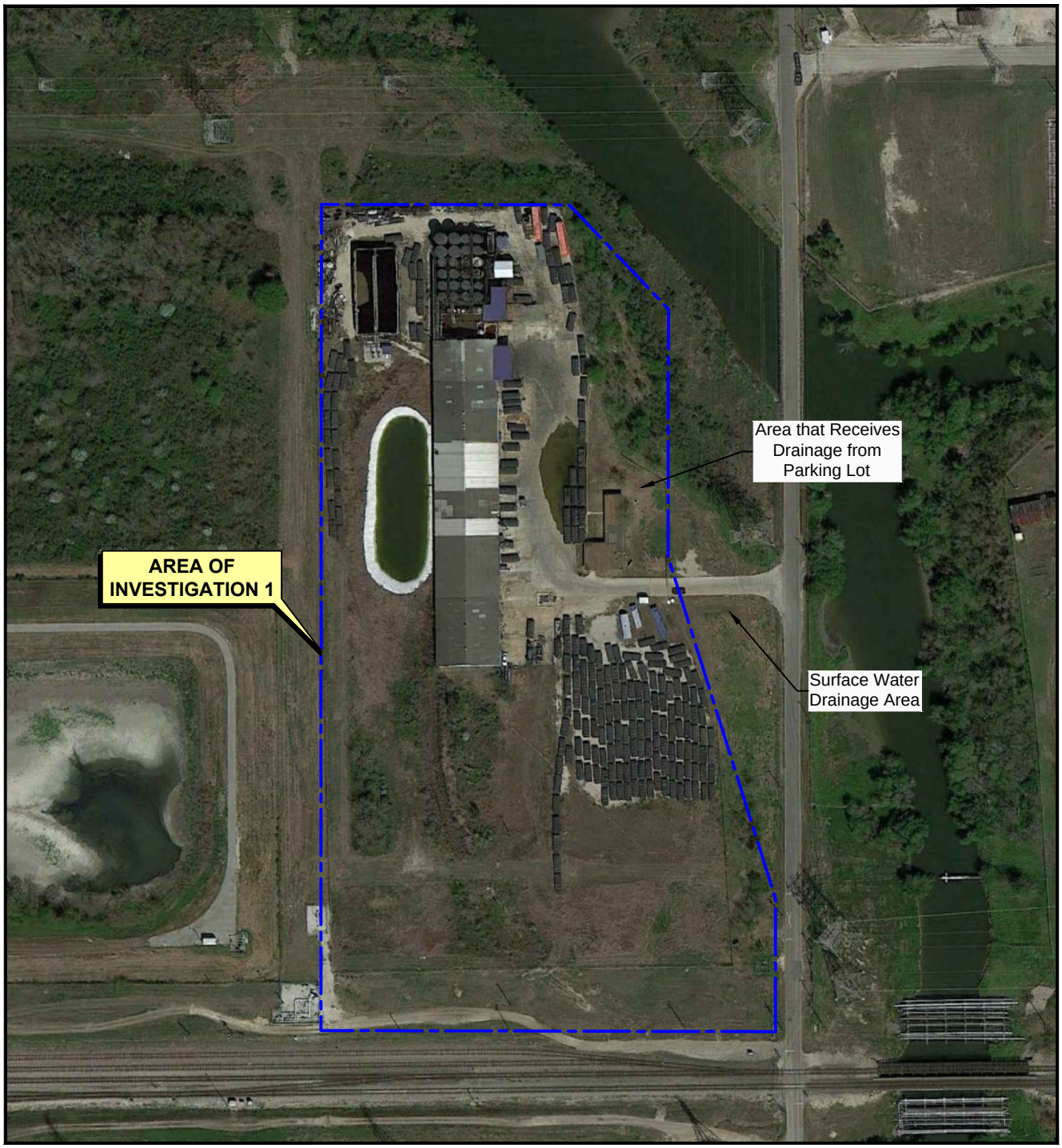
**US OIL RECOVERY**
PASADENA, TEXAS

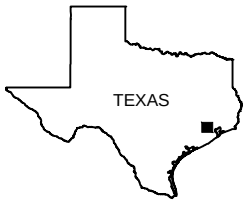
Figure D-1-16

# 2008 AERIAL PHOTOGRAPH

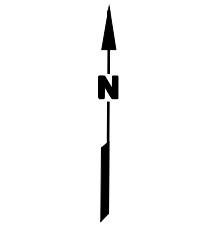
| | | |
|---|---|---|
| PROJECT: 1863 | BY: AJD | REVISIONS |
| DATE: APRIL, 2014 | CHECKED: MKW | |

**PASTOR, BEHLING & WHEELER, LLC**
CONSULTING ENGINEERS AND SCIENTISTS




AERIAL PHOTO LOCATION




SOURCE:
Base map from Google Earth, dated March 2012.

**US OIL RECOVERY**
PASADENA, TEXAS

Figure D-1-17

# 2011 AERIAL PHOTOGRAPH

| | | |
|---|---|---|
| PROJECT: 1863 | BY: AJD | REVISIONS |
| DATE: APRIL, 2014 | CHECKED: MKW | |

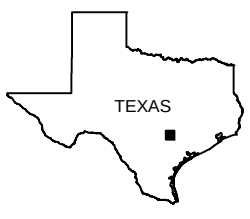
**PASTOR, BEHLING & WHEELER, LLC**
CONSULTING ENGINEERS AND SCIENTISTS

APPENDIX C –SITE MAP
REMEDIAL INVESTIGATION AND FEASIBILITY STUDY
U.S. OIL RECOVERY SITE – AREA OF INVESTIGATION-1
PASADENA, TX

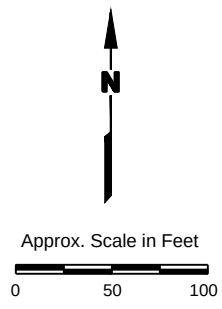

## EXPLANATION

Approx. Property Boundary

Approx. Security Fence




QUADRANGLE LOCATIONS




Source:
Imagery taken from Google Earth, photography dated April 8, 2014.

# US OIL RECOVERY SUPERFUND SITE

PASADENA, HARRIS COUNTY, TEXAS

Appendix C

## SITE MAP

| | | |
|---|---|---|
| PROJECT: 1737 | BY: ADJ | REVISIONS |
| DATE: FEB., 2015 | CHECKED: EFP | |

**PASTOR, BEHLING & WHEELER, LLC**
CONSULTING ENGINEERS AND SCIENTISTS

APPENDIX D RECEIVER ORDER
REMEDIAL INVESTIGATION AND FEASIBILITY STUDY
U.S. OIL RECOVERY SITE – AREA OF INVESTIGATION-1
PASADENA, TX

P-14
APREX
171X

NO. 2009-32636

| | | |
|---|---|---|
| **HARRIS COUNTY, TEXAS** | § | **IN THE DISTRICT COURT OF** |
| **Plaintiff,** | § | |
| | § | |
| **and** | § | |
| | § | |
| **THE STATE OF TEXAS** | § | |
| **Acting by and through the Texas** | § | |
| **Commission on Environmental Quality,** | § | |
| **A Necessary and Indispensable Party** | § | **HARRIS COUNTY, T E X A S** |
| **Party-Plaintiff,** | § | |
| | § | |
| **vs.** | § | |
| | § | |
| **KLAUS GENSSLER, individually, and d/b/a** | § | |
| **U.S. OIL RECOVERY, L.P.,** | § | |
| **MCC RECYCLING, L.L.P.,** | § | |
| **GENSSLER ENVIRONMENTAL** | § | |
| **HOLDINGS, L.L.C., U.S. OIL RECOVERY,** | § | |
| **LLP, a/k/a U.S. OIL RECOVERY, L.L.P.** | § | |
| **Defendants** | § | **125TH JUDICIAL DISTRICT** |

FILED
Loren Jackson
District Clerk
JUL - 7 2010
Time
Harris County, Texas
By
Deputy

## ORDER FOR APPOINTMENT OF RECEIVER AND MASTER

Be it remembered, that on June 2, 2010, plaintiff, Harris County, Texas, in the above-captioned and numbered cause, presented to the Court its Application for Appointment of a Receiver and Master. Counsel for Harris County, the State of Texas, and the defendants were all present and, this Court, after reading the Application for Appointment of Receiver and Master and the attachments, hearing testimony on the current conditions of the properties at 200 and 400 North Richey Road in Pasadena, Texas, taking judicial notice of all the pleadings and testimony and evidence offered by the Court in this and previous hearings in this case, as well as the arguments of counsel, GRANTS the Application and finds that:

1. Defendants Klaus Genssler, individually, and d/b/a U.S. Oil Recovery, L.P., MCC Recycling, L.L.P., Genssler Environmental Holdings, L.L.C., and U.S. Oil Recovery, LLP, a/k/a U.S. Oil Recovery, L.L.P., are violating environmental laws

and putting the health and safety of residents of Harris County at risk by storing hazardous and flammable waste in conditions that have created an imminent fire and flood hazard at their facilities at 200 and 400 North Richey Road in Pasadena, Texas;

2. Defendants Klaus Genssler, individually, and d/b/a U.S. Oil Recovery, L.P., MCC Recycling, L.L.P., and Genssler Environmental Holdings, L.L.C., have violated this Court's temporary injunction order signed on March 11, 2010, by failing to remove the hazardous and flammable waste and all industrial waste and wastewater from their properties at 200 and 400 North Richey Road;

3. Defendants Klaus Genssler, individually, and d/b/a U.S. Oil Recovery, L.P., MCC Recycling, L.L.P., Genssler Environmental Holdings, L.L.C., and U.S. Oil Recovery, LLP, a/k/a U.S. Oil Recovery, L.L.P., have failed to appear for two depositions ordered by this Court and have refused to accept service to appear in court upon court order to show cause in response to plaintiff's Motions for Contempt;

4. Defendant Klaus Genssler's current whereabouts are unknown and he effectively has abandoned the facilities at 200 and 400 North Richey Road in Pasadena, Texas;

5. Defendant Klaus Genssler has indicated in his reports to Harris County and the State of Texas that he and his companies have no money to clean up the properties pursuant to the terms of the Temporary Injunction, but is not in bankruptcy;

6. Defendant Klaus Genssler, individually, has previously been found to be causing suffering, allowing or permitting pollution to take place at 200 and 400 North Richey Road;

7. Defendant Klaus Genssler, individually, has taken in approximately $10,000,000.00 per year from the defendant businesses for the past 3-4 years, and has not reinvested this money into these companies. As a result, the physical plants at defendants' 200 and 400 North Richey Road facilities have fallen into disrepair to such a degree that they now pose a serious threat to the safety of the residents and the environment in Harris County, Texas;

8. Defendants Klaus Genssler, individually, and d/b/a U.S. Oil Recovery, L.P., MCC Recycling, L.L.P., Genssler Environmental Holdings, L.L.C., and U.S. Oil Recovery, LLP, a/k/a U.S. Oil Recovery, L.L.P., since the receivership was filed, have caused or have allowed or permitted others to remove valuable industrial equipment from their possession from 200 North Richey Road and 400 North Richey Road in Pasadena, Texas to places unknown;

9. A receivership is necessary because there is no other adequate remedy at law as defendants have failed to comply with two temporary injunctions, and have failed to appear in court when ordered to do so. In addition, there is an imminent threat to the residents of Harris County because defendants' facilities have limited fire protection and are illegally storing hazardous and other industrial waste, as well as flammable waste, on property that is partially in the floodplain and floodway;

10. If any portion of the Receiver's compensation under this order exceeds the defendants' assets which are under receivership, Harris County agrees to

compensate the Receiver up to ten thousand dollars ($10,000) for these services under this order. These funds are already authorized by Harris County Commissioners Court. Any additional amount this Court determines Harris County is to pay the Receiver is subject to approval by Commissioners Court. The Receiver will be compensated at three hundred fifty dollars ($350) per hour, subject to approval by Commissioners Court. Harris County is ordered to place ten thousand dollars ($10,000) in the Court's registry as a deposit against the Receiver's fees.

11. Special circumstances exist that justify the appointment of a Special Master, including the defendants' failure to appear for hearings or provide documentation. Counsel advised that Mr. Genssler cannot be located, but is reported to be out of state, in Alabama or in Germany, and to have various business deals underway involving companies with which he is involved, but, he will not disclose his interests in those businesses. The Court cannot travel the state, or to Alabama or Germany, to discover the defendants' relationships with each other and third parties, or where assets are located, but a Master can do so, and then report to the Court. Attempts to discover such information have been futile since Mr. Genssler refuses to appear and has retained multiple lawyers to protest every effort to obtain information. The Master's duties are limited to discovering the defendants' whereabouts, assets, and records, including their relationships with each other and third parties, and potential sources of income.

This Court takes into consideration the following documents: the plaintiff's Ninth Amended Petition; the March 11, 2010 Temporary Injunction, hearing evidence, and testimony;

and the June 8, 2008 Temporary Injunction, hearing evidence, and testimony; the Show Cause Order signed by this Court; the three Temporary Restraining Orders, all the evidence, testimony, and sworn pleadings in this case.

This Court, based on the overwhelming evidence presented in this case and pursuant to Chapter 64 of the Texas Civil Practice and Remedies Code, appoints ~~Rieeke-Baumann~~ Rick Townsend (713) 416-1766 as Receiver in this case, Klaus Genssler, individually, and d/b/a U.S. Oil Recovery, L.P., MCC Recycling, L.L.P., Genssler Environmental Holdings, L.L.C., and U.S. Oil Recovery, LLP, a/k/a U.S. Oil Recovery, L.L.P., and ORDERS:

(1) Defendants, Klaus Genssler, individually, and d/b/a U.S. Oil Recovery, L.P., MCC Recycling, L.L.P., Genssler Environmental Holdings, L.L.C., and U.S. Oil Recovery, LLP, a/k/a U.S. Oil Recovery, L.L.P., place all documents and property subject to this order in the custody and control of the Receiver, within five days of the execution of this order;

(2) That the defendants Klaus Genssler, individually, and d/b/a U.S. Oil Recovery, L.P., MCC Recycling, L.L.P., Genssler Environmental Holdings, L.L.C., and U.S. Oil Recovery, LLP, a/k/a U.S. Oil Recovery, L.L.P., are enjoined from further entry onto the properties at 200 North Richey Road and 400 North Richey Road, without further order of this Court. The Receiver has full access to both 200 and 400 North Richey Road, and has full authority to grant others access to those properties;

(3) That all real or personal property possessory claims or any interest in real property, easements, and rights used by the defendants Klaus Genssler, individually, and d/b/a U.S. Oil Recovery, L.P., MCC Recycling, L.L.P., Genssler Environmental Holdings, L.L.C., and U.S. Oil Recovery, LLP, a/k/a U.S. Oil Recovery, L.L.P., at their facilities at 200 and 400 North Richey

Road sites, including all trucks, processors, tanks, and other equipment, whether held by the defendants, their assigns, or contractors, is placed under custody and control of the Receiver;

(4) That all non-exempt real and personal property of Klaus Genssler within the jurisdiction of this Court are placed under the custody and control of the Receiver;

(5) That defendants, Klaus Genssler, individually, and d/b/a U.S. Oil Recovery, L.P., MCC Recycling, L.L.P., Genssler Environmental Holdings, L.L.C., and U.S. Oil Recovery, LLP, a/k/a U.S. Oil Recovery, L.L.P., are enjoined from encumbering or transferring property to anyone but the Receiver, and that the defendants are enjoined from concealing property at the 200 and 400 North Richey Road sites including all trucks, processors, tanks, and other equipment, including through the use of third parties, companies, agents, attorneys, pseudonyms, or assumed names;

(6) That the Receiver may retain counsel, as needed, as well as realtors and all other sales agents needed to sell property and rights. ~~The retention of the firm of Miller, Scamardi, and Carrabba, P.C., at three hundred twenty-five dollars ($325) per hour, is approved;~~

(7) The Receiver is authorized to hire all persons and entities necessary to assess the qualities of the items owned or possessed by defendants, and to sell or move them, as needed;

(8) That the Receiver is authorized to use any means allowed under the statute to bring the defendants' facilities at 200 North Richey Road and 400 North Richey Road in Pasadena, Texas permanently into compliance with environmental laws, including: a) seizing all assets in possession or control of defendants, Klaus Genssler, individually, and d/b/a U.S. Oil Recovery, L.P., MCC Recycling, L.L.P., Genssler Environmental Holdings, L.L.C., and U.S. Oil Recovery, LLP a/k/a U.S. Oil Recovery, L.L.P., including any entities controlled or managed by Klaus Genssler, or monies received for the benefit of Klaus Genssler; and, b) using the assets obtained to pay the Receiver's fees, and to hire an environmental remediation company to:

1) test and classify the waste in the drums and totes in the warehouse at 400 North Richey Road and determine where to properly dispose of the waste, to remove all leaking drums and totes and other containers and all hazardous waste contained in drums, totes and other containers as soon as possible to a Texas Commission on Environmental Quality approved facility, and take all other action necessary to secure these containers in such a manner as to protect the public;

2) test and classify the waste in the roll-off containers at 400 North Richey Road and determine where to properly dispose of the waste, and dispose of it at a Texas Commission on Environmental Quality approved facility;

3) test and classify the waste in the bioreactors at 400 North Richey Road and identify where to properly dispose of the waste, and dispose of the waste at a Texas Commission on Environmental Quality approved facility;

4) test and classify the waste that is presently held in vessels, pipes, and containers at 200 North Richey Road, and determine where to properly dispose of the waste, and then dispose of the waste at a Texas Commission on Environmental Quality approved facility; and

5) test and classify the waste in the tanks in the tank farm at 400 North Richey Road, and determine where to properly dispose of the waste, and then dispose of the contents at a Texas Commission on Environmental Quality approved facility.

(9) The Receiver may schedule hearings and meetings and direct parties and witnesses to give testimony at such hearings and meetings and to rule upon the admissibility of evidence at such hearings. He may place witnesses under oath;

(10) The Receiver's agents share his powers and immunity;

(11) An order from the Receiver, made pursuant to this order, is a court order;

(12) Every security officer, constable, deputy constable, sheriff, deputy sheriff, and every other peace officer with notice of this order is authorized to accompany the Receiver to any location designated by the Receiver where Receiver believes assets or documents of a defendant may be located, without the necessity of a writ of execution having been issued, and is ordered to prevent any person from interfering with the Receiver (or any person under the direction of the Receiver) from carrying out any duty under this order or interfering with any property in control of the Receiver, or any property subject to this order;

(13) The clerk is ordered to issue all appropriate writs;

(14) The Receiver is required to post a one hundred dollar ($100) bond. Harris County is required to post a one hundred dollar ($100) bond.

(15) No interference. Every person with notice of this order is ordered to assist the Receiver and not to interfere with any property in the Receiver's control or subject to this order, and is ordered to assist and not to interfere with the Receiver in the carrying out of his duties;

(16) All third parties are ordered to immediately notify the Receiver if they discover the existence of property, or of facts which might lead to the discovery of property in which any defendant has any interest;

(17) Notice to third parties. The Receiver, to the exclusion of every defendant, is the only party entitled to possess, sell, liquidate, and otherwise deal with every defendants' non-exempt property. Once third parties receive notice of this order, they may be subject to liability if they release property to any defendant, without the Receiver's prior written consent;

(18) The Receiver is authorized to re-direct and read the defendants' mail;

(19) Changes in addresses and contact information. Every defendant is ordered to immediately notify the Receiver, in writing, of all present addresses (home, work, deer lease, fishing camp, etc.), telephone numbers (at every address), cell phone numbers, pagers, fax numbers), e-mail addresses, and to immediately notify the Receiver, in writing, of all changes in the information;

(20) Duties if anyone resists the Receiver's orders, based on the advice of third parties. Any witness or person resisting an order or request of the Receiver, based on legal or other advice, is ordered to give the full name, address, fax number, e-mail address, cell phone number, and direct telephone number for each person giving that advice and to instruct each person to immediately contact the Receiver;

(21) No defendant may spend non-exempt funds without the Receiver's prior written permission;

(22) The Receiver has no duty to maintain, guard, or ensure property taken into *custodia legis*, or to maintain or pay any lease, nor shall Receiver be required to pay any mortgage, lien or assessment, defend against any lawsuit, pay any tax or fee, maintain any insurance coverage or have any obligation except as specifically ordered;

(23) The Receiver may certify copies;

(24) The Receiver may require answers to questions, or additional turnover and production, in shorter time periods than set by the Texas Rules of Civil Procedure;

(25) The Receiver may collect all unclaimed funds;

(26) The Receiver may collect, sell, or assign the defendants' rights to all air miles and rewards programs;

(27) The Receiver may require tax assessors and the Texas Department of Transportation to freeze titles, or re-title vehicles in the Receiver's name, as Receiver;

(28) All third parties who hold the property of the defendants, Klaus Genssler, individually, and d/b/a U.S. Oil Recovery, L.P., MCC Recycling, L.L.P., Genssler Environmental Holdings, L.L.C., and U.S. Oil Recovery, LLP, a/k/a U.S. Oil Recovery, L.L.P., are ordered to immediately notify the Receiver, and to deliver the property within five working days of demand from the Receiver;

(29) Notice to third parties. The Receiver, to the exclusion of every defendant, is the only party entitled to possess, sell, liquidate, and otherwise deal with every defendants' non-exempt property. Once third parties receive notice of this order, they may be subject to liability if they release property to any defendant, without the Receiver's prior written consent;

(30) Receiver may order providers of utilities, telecommunications, telephone, cell phone, cable, internet, data services, internet website hosts, satellite television services, and all similar services, (including Time Warner, AT&T, Verizon, Sprint, Satellite TV, Direct TV, Google, Yahoo, and internet blogs and chat rooms) and financial institutions compelling the turnover of any information that the Receiver believes might prove or lead to the discovery of the existence and location of a defendant's whereabouts or assets, including account information, telephone numbers, names, service addresses, telephone numbers, IP addresses, call detail records, payment records, and bank and credit card information. Such orders shall be directed to the entity from which the information is sought and describe, as specifically as possible, the precise information requested with the dates for which the information is required, which shall not be more than one year before the issuance of the Receiver's request, unless specifically stated in the request or attached letters;

(31) This Order specifically serves as the court order required by 47 USC § 551, and satisfies all obligations of the responding party to obtain or receive a court order prior to disclosing material containing personally identifiable information of the subscriber and/or customer. The disclosure of information pursuant to this Order is not a violation of PUC Substantive Rule 25.272. This Order satisfies the law, regulation, or legal process exception to the Proprietary Customer Information Safeguards found in PUC Substantive Rule 25.272 (g)(1).

(32) The Receiver may order any Consumer Reporting Agency, as defined by the Fair Credit Reporting Act ("FCRA") section 15 USC § 1681b(f), to provide consumer reports on defendants, as allowed under FCRA §1681b(a)(1);

(33) The Receiver may order providers of global positioning satellite (GPS) and tracking information, to provide information that might assist the Receiver in locating a defendant or defendant's assets.

(34) The Receiver has full power and authority to take possession of all non-exempt property of Klaus Genssler, individually, and d/b/a U.S. Oil Recovery, L.P., MCC Recycling, L.L.P., Genssler Environmental Holdings, L.L.C. and U.S. Oil Recovery, LLP, a/k/a U.S. Oil Recovery, L.L.P. that is in any other defendant's actual or constructive possession or control;

(35) Klaus Genssler, individually, and d/b/a U.S. Oil Recovery, L.P., MCC Recycling, L.L.P., Genssler Environmental Holdings, L.L.C., and U.S. Oil Recovery, LLP a/k/a U.S. Oil Recovery, L.L.P. are ordered to deliver to the Receiver all non-exempt cash, interest on deposits, and stock dividends, within five days of notice of their existence;

(36) This order is limited to non-exempt assets, even if it seems to state otherwise. Any defendant claiming any exemption is ordered to notify the Receiver of the exemption, immediately. The Receiver shall assume that property is not exempt, until the person claiming

the exemption states the exemption claimed, the legal and factual grounds for the exemption, and describes the property with enough specificity that a constable can levy, based on the description.

(37) Duties to disclose and supplement. Klaus Genssler, individually, and d/b/a U.S. Oil Recovery, L.P., MCC Recycling, L.L.P., Genssler Environmental Holdings, L.L.C. and U.S. Oil Recovery, LLP a/k/a U.S. Oil Recovery, L.L.P. are ordered to fully disclose to the Receiver all of defendant's assets and to neither directly nor indirectly interfere or impede the Receiver in the performance of his duties under this Order. Exempt and non-exempt assets must be disclosed, so that the exempt status of the property can be determined. Every defendant is ordered to supplement all disclosures, in writing, within five days of knowledge of information required disclosed by this Order.

(38) The attached list is illustrative, and the Receiver's powers are to be liberally construed, including:

(i) Production and turnover. Ordering, from all defendants and third parties, the turnover of assets, evidence and documents upon all matters he feels pertain to compliance with this Order, including every defendant's assets, unopened mail, the location of assets, values of assets and all other financial matters pertaining to any defendant, including the amount of money that any defendant may need on a periodic basis to continue the defendant's business or to provide for the necessities of life;

(ii) Examinations and testimony. Scheduling hearings and meetings and directing parties and witnesses to give testimony at such hearings and meetings and to rule upon the admissibility of evidence at such hearings;

(iii) Administering oaths. Placing witnesses under oath and examining them himself, or through his agents;

(iv) Compliance. Seeking compliance with this order by every defendant by filing a motion for contempt and serving the person accused of contempt with notice to appear before this Court and show cause why that person should not be sanctioned for contempt;

(39) Disputes. If there be any dispute whether an asset is non-exempt property of a defendant, the Receiver is authorized to take custody of the asset until the Court can determine the rights of those claiming interests in the asset;

(40) Access to assets. The Receiver is authorized to take all action necessary to gain access to real property, leased premises, storage facilities, mail, and safety deposit boxes, in which real or personal property of any defendant may be situated, whether owned by a defendant or not.

(41) This Court, based on the overwhelming evidence presented in this case, appoints Sherman Smith as Master in this case under Rule 171, Texas Rules of Civil Procedure. The Court notes these special circumstances, among others:

a. This case revolves around toxic waste, including toxic spills that are prompted or exacerbated by bad weather. A Master can immediately photograph and make the Court aware of the situation, whereas holding even an emergency hearing requires hours to draft and file pleadings, then notify all parties;

b. The Master can independently chronicle spills and illegal entry, whereas a sitting Court cannot drop what it is doing to drive to the site and inspect;

c. The Master can travel, including to Alabama and other locations, to interview and examine those who are, or might be, doing business with defendants; and

d. The Master can conduct "on the spot" examinations/interviews of transient witnesses, like truck drivers who are removing defendants' property or waste. A driver who lives out of state, or more than 150 miles away would be out of the Court's jurisdiction before a party could draft and serve a subpoena to appear for deposition – days later – taking the property, truck, or waste with him. Many of these witnesses would have knowledge of only small parts of the puzzle, and a quick Master's interview would suffice to obtain all that the witness knows. This testimony would be lost without the intercession of a Master.

(42) The Master's duties are limited to determining the ownership of assets, the interrelationships of the various entities, and the causes of any toxic situations at 200 or 400 North Richey Road, Pasadena, Texas.

Taxation of costs awaits the entry of the final order in this case.

SIGNED ON July 19, 2010.

THE HONORABLE KYLE CARTER

**Approved:**

Laura Fiorentino Cahill
Deputy Division Chief, Environmental Division
Harris County Attorney Vince Ryan's Office

I, Loren Jackson, District Clerk of Harris County, Texas certify that this is a true and correct copy of the original record filed and or recorded in my office, electronically or hard copy, as it appears on this date
Witness my official hand and seal of office this July 19, 2010

Certified Document Number: 45846746 Total Pages: 14

LOREN JACKSON, DISTRICT CLERK
HARRIS COUNTY, TEXAS

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APPEX

CAUSE NO. 2009-32636-B

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|---|---|---|
| **Safety-Kleen Systems, Inc., Oxid, L.P., Southwest Shipyard, L.P., Enterprise Products Operating, LLC, Enterprise Transportation Company, Vopak Terminal Galena Park, Groendyke Transport, Inc., T.T. Barge Cleaning, Inc.** | § | **IN THE DISTRICT COURT OF** |
| **Plaintiffs,** | § | |
| **v.** | § | |
| | § | **125TH JUDICIAL DISTRICT COURT** |
| **U.S. OIL RECOVERY, L.P., KLAUS GENSSLER, MCC RECYCLING, L.L.P., U.S. OIL RECOVERY, L.L.P., SCALTECH INTERNATIONAL LLC AND MCC GROUP , N.V.** | § | **HARRIS COUNTY, TEXAS** |
| **Defendants.** | § | |

FILED
Chris Daniel
District Clerk
MAY 22 2012
Time:
By
Harris County, Texas
Deputy



**Order Appointing Successor Receiver**

On the ___ day of _____ came on to be considered Intervenors' (now plaintiffs') Motion to Substitute Receiver. The Court having considered the motion finds it should be granted. It is accordingly:

ORDERED that:

Rick Townsend was relieved of his duties as Receiver effective as of March 19, 2012. The Receivership Order is hereby reinstated in this severed case and ~~Miles D. Harper III~~ Eva Engelhart is hereby appointed as the successor Receiver. Other terms of the Receivership Order remain in place except that: (1) the receivership will no longer be over Klaus Genssler, individually, or Genssler Environmental Holdings, L.L.C., which is in bankruptcy, and (2) Intervenors will be responsible for the successor Receiver's fees and expenses going forward to the extent those fees and expenses cannot be paid by using assets of the Receivership estate and plaintiff's bond shall be released and Intervenors shall post a bond equal to the bond presently posed by Harris County and the State of Texas in the amount of $100.

The purpose of the Receivership is to assist the plaintiffs in connection with the cost effective remediation of the sites in accord with plaintiffs' obligations under the currently existing AOC or subsequent orders of the EPA.

Signed this 22 day of May, 2012.

Judge Presiding